

LIGHTING HOW-TO Camera

**Year

Make The Tale of the **

Year

The Tale of the **

The Tale of the ** SOFTWARE TIPS **BEST NEW GEAR: CANON G7 X** NIKON 20_{MM} **PANASONIC** LX100 Nikon D750 D750 Why a DSLR still matters to the way you shoot Top speed and resolution Awesome **AF tracking** Best-in-class video capture Rugged body, Wi-Fi & more P.54

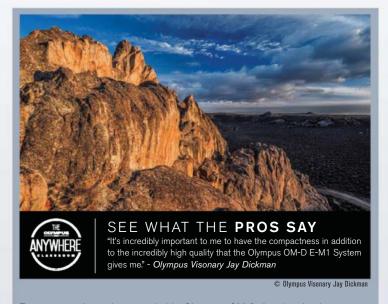
Olympus OM-D:

The Perfect Complement To Any System



No matter what camera you use, or if your goal is upgrading to an exciting new state-of-the-art system, the Olympus OM-D lineup is the perfect way to extend and enhance your creative capabilities. An OM-D lets you capture and share exquisite imagery, and tell the stories that showcase your individual life experiences and unique way of seeing the world. Whether you opt for the pro class flagship OM-D E-M1, the classic OM-D E-M5, or the latest high-performance, high-value OM-D E-M10, an OM-D makes the ideal complement to any existing camera system. It delivers world-class imaging performance plus blazing speed and responsiveness, while functioning seamlessly with other brands of lenses using simple, affordable adapters. And Olympus makes it easy to build an entirely new optical arsenal with its signature savings program on the extensive line of superb, ultra-compact Olympus Micro Four Thirds M. Zuiko lenses.

The defining feature of the award-winning OM-D series of compact mirrorless interchangeable-lens cameras is their unique combination of extreme portability and stylish, user-friendly ergonomic design. They provide unsurpassed cross-system compatibility, supreme optical flexibility, plus the power, sophisticated controls, and image quality that rival many high-end DSLRs. With their advanced lens technology based on the inherently superior light-gathering efficiency of the Micro Four Thirds format, intelligent TruePic™ image processors, they can deliver stunningly sharp images and Full HD 1080p videos at incredible speed. And their hi-res 16MP Live MOS sensors capture the subtlest details in breathtakingly vibrant color. That's why the Olympus OM-D line sets a new higher standard for the entire Compact System Camera class.



To get more from the remarkable Olympus OM-D family, check out the Anywhere Classroom series at getolympus.com/anywhereclassroom

In Season 2, Olympus Trailblazer Alex McClure shares his expertise on light painting, shooting at night and how to get the most out of the technology to create dynamic evocative photos.

Should you switch to an Olympus OM-D and Olympus lenses to complement or supplement your existing system? Only if you want to experience awesome real-world performance that extends the boundaries of what you thought was possible. To learn more about how the Olympus OM-D lineup can take your pictures to a higher level visit **GETOLYMPUS.COM/OMD**.



Capture your stories."

A LENS SYSTEM AS

DEDICATED TO CAPTURING EVERY DETAIL

AS YOU ARE.







Capturing outstanding images begins with outstanding lenses.

Our lens system combines superior optical technology with high imaging power, designed into a compact, portable package.

Our complete lineup of prime, macro, telephoto, splashproof, dustproof, wide angle, and fast aperture zoom lenses offers you the perfect choice for every shooting occasion.

And now it's easier than ever to build your system with our Bundle and Save Lens Program. Save on lenses when purchased with an OM-D. Learn more at getolympus.com/stackable





Capture your stories."



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HOW TO MAKE GREAT PICTURES JANUARY 2015

VOLUME 79, NO. 1



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LEAVE ORDINARY IN THE DUST Featured photo was taken by IAN ZAMORA, Surfboard Craftsman. "I work in extreme conditions where my lenses are exposed to water, dirt, and dust. The new Hoya EVO Antistatic filters keep clean longer and are UV(0) the easiest to clean when they do get dirty or wet." Introducing the tough-as-nails, easiest to clean filters on the planet Available as UV, Protector & The new HOYA EVO ANTISTATIC filters are ingeniously designed to repel dust, so you can Circular Polarizer. get clearer shots in dusty, dirty situations. When the dust does settle, you can clean them

in a matter of seconds, and return to shooting almost instantly. They're also waterproof, smudge-proof, stain-proof, and scratch resistant so you can rely on them all day, every day. Check out the mind-bending demo videos on our site today to see the ANTISTATIC difference for yourself. The wave of the future is now playing at www.kenkotokinausa.com/hoya.



Also, check out HD2, NXT and alpha filters from HOYA.

















EDITOR'S LETTER



The Rise of You

Many of you may know that I wear another hat around these parts. Besides editing this august publication and directing *Popular Photography*'s content in all of the media in which we publish (web, digital editions, social media, books, etc.), I also serve as the editor-in-chief of *American Photo*. There we cover the heroes of photography, the trends (aesthetic and technological), and the

context and culture of image making. In short, the big picture.

That magazine is about to celebrate its 25th anniversary with a special issue (January/February 2015), in print and online at americanphotomag.com, devoted to the images of a generation—and where we're headed next. Not only are we choosing some of the most important photos of the past quarter century, but we're also asking heavyweights from throughout the photo world to reflect on how the medium has changed.

What does all that have to do with the issue of *Pop Photo* you're holding now? Well, one of the themes that has come up repeatedly on that project is what Anthony Bannon, executive director of the Burchfield Penney Art Center in Buffalo, New York, and former chief of the George Eastman House, calls "the rise of the amateur." And nothing demonstrates the ascent he describes more clearly than *Popular Photography*'s Annual Readers' Photo Contest.

This year, not a single prize-winning image in this, our biggest competition, was taken by a professional photographer. Without knowing the identities of the shooters, our judges awarded top honors to work by a clinical social worker, a software engineer, a professor of music history, and other accomplished photographers who don't make a living with their cameras. You can judge the quality of their work for yourself in the feature story starting on page 59 and in the galleries of finalists that we'll post on PopPhoto.com this month.

In the past few years, as famous and brilliant photographers such as Peter Lik and Rodney Lough Jr. have taken home prizes in our contest, I've heard protests from some of you that it seemed unfair for amateurs to be judged by the same standards as pros of their caliber. But I've long maintained that the best non-pros among you can produce superb images that speak for themselves. And you proved me right!





NEWSSTAND Photographer Satoshi gave our 2014 Camera of the Year, the Nikon D750, gets the movie-star treatment it deserves. Story on page 54.

SUBSCRIBER Christopher Axe of Monterey, California, took the landscape prize for his Big Sur scene in our Annual Readers' Photo Contest, page 59.

POPULAR PHOTOGRAPHY

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For us, we don't think photos are photos until they're on paper.

Floto+Warner, professional photographers



What you see through your lens truly becomes art when you see it on paper. This is why the right printer is an essential tool in your workflow. A Canon PIXMA PRO-1 professional inkjet printer provides a level of quality and accuracy true to your unique vision. Paired with Canon Print Studio Pro software, you can be sure that from the click of the shutter to when you hit "print," your art will appear Exactly As You Envisioned.

usa.canon.com/pro-1





distillation produced rum's first fiery incarnation, known

KILL-DEVIL

Seemingly overnight, 'Kill-Devil,'

a.k.a.
'Rymbullion,'
a.k.a.
'Barbados water

- WAS IN HIGH DEMAND. =

THE ONCE UNWANTED BY-PRODUCT OF T.
SUGAR INDUSTRY WAS REDOUBLING PROFI
EARNING MOLASSES THE DESIGNATION

BLACK GOLD



BLACK OUT

A photo printer with bottomless blacks

FROM EACH new generation of Epson inkjet printers, we've come to expect quantum leaps

that force us to make images worthy of the improvements. The first in Epson's new SureColor line, the P600, does that in spades.

This 13-inch, professionalgrade, pigment-based printer is Epson's latest desktop flagship. Well built, with wireless connectivity options from smartphones, tablets, and PCs, the P600 accepts cut sheets up to 13x19 inches, can output roll-print panos up to 10 feet long, and does direct-printing to canvas, art board, and CDs.

Its most newsworthy advance is the black densities produced by the new UltraChrome HD inks. Sample prints show unprecedentedly deep blacks, with unusually smooth tonal gradations across a very long gray scale. Colors are great, too.

P600

13-inch,
pigment-based
inkjet printer
Epson's flagship
desktop model
9-color inkset

EPSON SURECOLOR

2.7 min. print time for full-color 11x14 print \$800, street epson.com

CHRISTOPHER AXF (III IFS)

NEXT * JUST OUT

FLAT LITE

As skinny as a light can be

THE FACT that Fotodiox's new line of four 1-inch-thick FlapJack LED Edge Lights includes circular as well as rectangular lights brought a smile to our faces. We're crazy for the natural catchlights these circular lights can bring to our portrait subjects' eyes—a rare form factor among LED lights of any size.

The continuously dimmable FlapJacks are called Edge Lights because their lightemitting diodes circle the outer edge of each unit. Their output is aimed inward and is softened by several layers of diffusion material; the indirect aim promises softer, hot-spot-free lighting. The lights, good for stills or video, are quite bright—285 Lux and can run on AC or battery power. Battery, charger, and power cord are included.

Fotodiox Pro FlapJack LED Edge Light

From \$250, direct

fotodioxpro.com

After a complete charge, the FlapJack can run at full power with the included battery for approximately 2 hours and 15 minutes.



>Tamron, the company that invented the all-in-one zoom in 1992, shipped its 5 millionth unit on September 30, 2014.

>Someone at Ricoh is hungry. Colors for the company's Pentax K-S1 DSLRs are Strawberry Cake, Blue Cream Soda, and Lime Pie.

INSIDE TECH

Lee's System

The 105mm Lee Landscape Polarizer mates well with the company's 100mm system of filter holders. Designed to accept 100mm wide filters, they attach to lenses with the help of an optional adapter ring. Within the holder's slots, square or rectangular filters can slide up and down or rotate, while circular filters such as Lee's Landscape Polarizer can thread onto the front of the holder.

FILTER FACTOR

A big 105mm

slimline polarizer

LEE'S LATEST (and, at 105mm, its largest) circular polarizer doubles as a warming filter. While regular polarizers are typically used for deepening blue skies and eliminating reflections, this

one also brings out browns, golds, greens, and other

> earth tones—the reason Lee has dubbed it a "Landscape Polarizer." This warming characteristic can also minimize the blue casts typical of lighting on overcast days.

Another advantage? Thanks to its low-profile aluminum ring, this filter will not show vignetting with full-frame lenses as wide as 16mm when used on a Lee twoslot 100mm-system filter holder.

Lee 105mm Landscape Circular Polarizer

\$260, street

leefilters.com





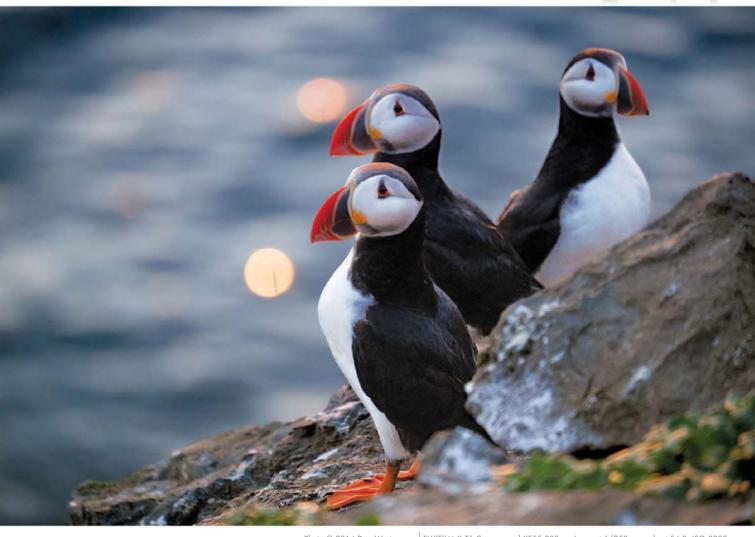


Photo © 2014 Dan Westergren | FUJIFILM X-T1 Camera and XF55-200mm Lens, at 1/250 seconds at F4.8, ISO 3200.

Inspiring places can fuel a **Passion...**



"When the photo world switched to digital photography my quest to replace my small film camera became difficult and I resigned myself to carry huge cameras around the world to do my work. Now FUJIFILM X-Series cameras have changed my thinking. With the amazing, weatherproof X-T1, I can carry less and move faster, without sacrificing image quality."

-Dan Westergren - Director of Photography, National Geographic Travel







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GO DEEPER

A permanently sealed compact good to 200 feet

WITH ITS 16GB of built-in memory and permanently sealed rubber-clad body, the SeaLife Micro HD underwater compact will take divers down to 200 feet without the worry and expense of an underwater housing, memory card, or O-ring maintenance. The first camera of its type, its only link

to the outside is a waterproof USB port for downloading images from its 16GB memory and charging its Li-ion battery.

The lens is the full-frame equivalent of a 20mm f/2.8. Want more? The Micro HD+ adds Wi-Fi connectivity and another 16GB of memory.

SeaLife Micro HD

\$399, street

sealife-cameras.com

ZOOM CLOUT

A wide-to-standard Pentax zoom

DESIGNED FOR

Pentax K-mount cameras, the newest Pentax utility zoom from Ricoh provides an ample 5.3X zoom range that's the full-frame equivalent of 24.5–130mm. Designed to capture wide-angle subjects such as landscapes,

interiors, and group portraits, the zoom also reaches into the moderate tele range for single and two-up portraiture.



The lens's strengths include Pentax's HD coating for increasing image contrast and minimizing the ill effects of flare, glare, and ghosting, even under unfavorable back-lit conditions. Its 11 weather-resisting seals let you take the

zoom into inclement conditions with confidence.

HD Pentax-DA 16–85mm f/3.5–5.6 ED DC WR Digital ED PRO

\$747, street ricohimaging.com

NEWS Feed

>Swipe
through
touchscreen
menus in
comfort this
winter. A layer
of Touch Tonic
liquid (available from the
Photojojo
store) adds
friction to your
gloved
fingertips.

>Impossible
Project has
two groovy
monochromatic emulsions
for 600-series
Polaroid
cameras—one
tinted cyan, the
other magenta.

>Polaroid may have ditched instant film, but the brand is still around. Its latest venture: a GoPro-like action cam called the Cube.

> Give your smartphone's camera better close-ups with the Easy-Macro lens. The \$35 lenses rubberband around phones and smaller tablets, offering 2X, 4X, and 10X magnification.

>LomoChrome Turquoise film that's expected in April has the cross processed look baked in.



On-the-Go Video Editor Adobe Premiere Clip

Whether you want to cut together a few different segments for a video to share on Facebook. upload edited images to Instagram, or simply send a polished video to vour closest friends. Adobe's free Premiere Clip app for iOS can help. You can include both video and stills. filter the color, and add music. You can even insert titles, go slo-mo, or create fades between segments. When done, share directly to Facebook or Twitter, or save to your camera roll to upload elsewhere.

THE LOWDOWN

SUPER VISION Canon recently announced its plan to dive into what it calls Super Machine Vision (SMV), developing advanced vision systems for robotic applications whose visual processing capabilities could surpass those of humans. Among other capabilities, SMV systems are expected to be able to predict future manufacturing outcomes based on what machines have previously recorded.



Introducing Blackmagic URSA, the world's first user upgradeable 4K digital film camera!

Blackmagic URSA is the world's first high end digital film camera designed to revolutionize workflow on set. Built to handle the ergonomics of large film crews as well as single person use, URSA has everything built in, including a massive 10 inch fold out on set monitor, large user upgradeable Super 35 global shutter 4K image sensor. 12G-SDI and internal dual RAW and ProRes recorders.



Super 35 Size Sensor

URSA is a true professional digital film camera with a 4K sensor, global shutter and an incredible 12 stops of dynamic range. The wide dynamic range blows

away regular video cameras or even high end broadcast cameras, so you get dramatically better images that look like true digital film. The extra large Super 35 size allows for creative shallow depth of field shooting plus RAW and ProRes means you get incredible quality!



Dual Recorders

Blackmagic URSA features dual recorders so you never need to stop recording to change media.

That's critical if you are shooting an historical event,

important interview or where you just cannot stop shooting! Simply load an empty CFast card into the second recorder and when the current card is full, the recording will continue onto the second card, allowing you to change out the full card and keep shooting!



User Upgradeable Sensor

Blackmagic URSA features a modular camera turret that can be removed by unscrewing 4 simple bolts! The camera turret includes the sensor, lens mount and lens control connections

and can be upgraded in the future when new types of sensors are developed. This means your next camera will be a fraction of the cost of buying a whole new camera! Choose professional PL mount, popular EF mount and more!



Built in On Set Monitoring!

Say goodbye to bulky on set monitors because you get a massive fold out 10 inch screen built into Blackmagic URSA, making it the world's

biggest viewfinder! The screen is super bright and features an ultra wide viewing angle. URSA also includes two extra 5" touch screens on both sides of the camera showing settings such as format, frame rate, shutter angle plus scopes for checking levels, audio and focus!



Blackmagic URSA PL \$6,495



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Learn more at bayphoto.com/metalprints



Creative Edge MetalPrints





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ACTION READY

TINY GOPRO CAMERAS introduced a new form factor for still/video cameras that has attracted hordes of skiing, skating, and scubadiving users. Now those shooters are clamoring for accessories. Here are five action-cam add-ons suited for any adventure.

Knekt GPDL \$100 A unique low-angle trigger grip for GoPro cameras, the GPDL provides easy single-handed, ground-level still or video captures. Made of stainless steel and military-grade aluminum, it's built to last, but weighs all of 5.3 ounces. Perfect for low-angle, follow-cam shots.



Polar Pro PowerPole \$130 We've seen extension poles for making well-framed selfies, but the 13-ounce, all-aluminum PowerPole goes a step further. Its built-in battery can add up to 10 additional hours of GoPro video to your day, and it can charge your cell phone, too!

Tenba Shootout ActionPack 14L \$200 This well-designed backpack holds up to four action cams, each in its own plastic-windowed compartment with dedicated space for cables, chargers, and mounts. Tethered wallets hold batteries, thumbscrews, and SD cards.

Sync Adventure Camera Stabilizer \$350 The Sync offers dual-axis stabilization from a brushless, silent motor for shake-free hand-held GoPro video clips. Battery powered, with 2 hours of operating time per charge, the unit boasts a 3.5-inch rotatable LCD display.

NEWS FEED

>For better control on iPhone cameras, give Manual a try. The app by Little Pixels offers shutter speeds, white balance, bracketing, and more—all for \$1.99.

>No sooner did Apple's Aperture bite the dust than Adobe stepped up with a free plugin for carting Aperture libraries into Photoshop Lightroom. Yes, ratings, metadata, tags, stacks, and labels go, too.

>Speaking of Lightroom, Photoshelter's updated LR plugin is noticeably smarter than its predecessor. You can now set it to automatically apply LR edits to linked Photoshelter files.

>Novoflex's fully modular TrioPod tripod now offers nine different leg sections, including three-, four- or five-section aluminum or carbon fiber options.



4K IMAGING IS becoming more common, especially now that cameras such as the Panasonic Lumix GH4 and the GoPro HD Hero4 shoot it right to memory cards. A limiting factor? The dearth of screens that can display 4K. Apple has a solution: Its new Retina iMac has a 5K display with a total resolution of 5120x2880. That's 14.7 megapixels—about 7 times as many pixels as it takes to make 1080p, which we currently consider to be HD. If you were to take a photo with the new 8MP iPad camera, for example, the image wouldn't be close to big enough to make desktop wallpaper. Of course, the new iMac is not just a screen—it's also a powerful computer. At \$2,500 (street, apple.com) it actually seems like a pretty good deal, at least by Apple's standards.

\$13.70

Median hourly income for pro photographers in 2012

4%

Expected 10-year growth in number of annual pro jobs

SOURCE: U.S. Dept. of Labor Statistics

SAMSUNG



Explore a whole new dimension of detail. With stunning 4K video, 28 megapixel BSI CMOS sensor and continuous AF shooting at 15fps, the Samsung NX1 lets you make your mark.

#DITCHTHE DSLR



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"Give your portraits a professional, polished glow in just a few minutes." Digital Photo Sept/Oct 2014



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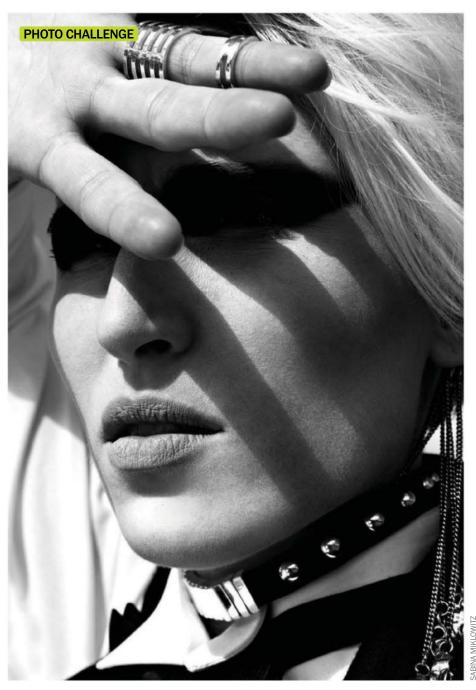
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ONVERSATION. INSPIRATION. CONTESTS. AND YOUR QUESTIONS ANSWERED



SHADY LADY

Natural drama wins our call for strong-shadowed portraits

FASHION SHOOTER Sabina Miklowitz took this winning portrait in the harsh midday sun on her Brooklyn, New York, rooftop. After experimenting with mirror shards to create shadows and reflect light, she asked her model to place a hand over her face. "It's simple and natural," Miklowitz says. "Aside from creating interesting patterns on her face, the model's pose is also a natural reaction to bright light and evokes a feeling of struggle."

Miklowitz edited the image to emphasize the strong diagonals across the face: After some sharpening and color correction in Capture One 6, she brought her image into Adobe Photoshop CS6 to convert it to black-and-white; dodging and burning added contrast and played up

Shot with a Canon EOS 7D and 18-55mm f/3.5-5.6 **Canon EF-S** lens (1/800 sec at f/9, ISO 100). See more at sabina miklowitz.com. the angles. She says, "I wanted to bring a level of abstraction to each photograph, calling attention to the pure lines and shapes within the composition."

—Jeanette D. Moses

NEXT PHOTO In "9 Ways to Get Great

CHALLENGE Ice" (p. 48), Samantha Chrysanthou and Darwin Wiggett share tips for shooting icy landscapes. Send us your best photo of ice by January 31 and you could win \$100 and your story here. Read the rules and enter at PopPhoto.com/contests.



THE FIRST TIME it was exhibited, Paper Mountains garnered two memorable reactions. Brendan Austin recalls. A curator asked. "Isn't nature good enough?" And a rock climber claimed he could see himself scaling the ridges in the images. The Stockholmbased photographer relished get at the essence of a project that entailed manipular both comments, which together his own printed photos of mountains into new pictures that bear distinctly manmade

marks, creases, and folds.

"I wanted to use my hands more," Austin says. "Normally, you shoot, you edit, you do a bit of work in a darkroom or on the computer, and then you put it out digitally or as a print. I liked the idea of interrupting that process, working something else out and pushing it in another direction."

He had been toying with some "fictional landscapes," but he decided to get his hands dirty after witnessing the Sierra Nevada mountains rise above the

immense flatness of the Badwater Basin in Death Valley. Paper Mountains primarily comprises mountaintop photos Austin took with Cambo Wide RS 1200 and Phase One 645DF+ bodies and a Phase One IQ260 back on a 2008 visit to Iceland and a 2009 road trip through the Deep South, Texas, and New Mexico; he also included older photographs of his native New Zealand

After some frustrating attempts, he arrived at a process that combined relative simplicity Brendan Austin is a commercial photographer and artist who specializes in architecture and the landscape.















See more of Paper Mountains and other work by this photographer at brendan austin.com.

with randomness: He'd select an image, edit it a bit on his computer, then print it onto thin paper, which he would then fold, crumple and tweak with his hands. Austin then photographed the reworked image and repeated the process a few times, either manipulating the same image in a new way or working with a different mountain. Finally he brought the faux landscapes back to the computer for further editing, sometimes combining elements

from different pictures, and then printed the final.

For Austin, Paper Mountains isn't about making viewers question whether the scene is real; it's about how manipulation affects one's relationship to nature: Does it alienate us or bring us closer? He won't offer a conclusion, but says his use of manipulation suggests a tendency "to see things in a much darker sense, a different sort of landscape that doesn't feel like it's on this planet."

The beautiful uncertainty of Paper Mountains challenges the way we think about landscape photography and even reality itself. "I lived in many different places before I settled down in Sweden," Austin says. "I moved possibly 60, 70 times. When people say, 'Where were you when you were 12?' I cannot for the life of me know, because it's all blended into one. Maybe all these different locations have blended into one fictional place."

—Jon Blistein





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At the heart of the image...







TO ADD A GRAPHIC CHARGE to her silhouette, Cooper thoughtfully positioned herself so the boy's fishing pole created a clean, strong diagonal line through the center of her composition.

DAKOTA DREAMS

Finding the light in the Black Hills

ON A 2013 Mentor Series trek to South Dakota, Lexi Cooper found herself attracted to a group of boys fishing in the Black Hills' Custer State Park. "I always like to incorporate people in my photographs, and I was glad when this opportunity presented itself," says the 21-year-old photography major at Georgia's Savannah College of Art and Design. The Chicago native lucked into a rare opportunity that day: Considering that South Dakota is the fifth least populous state, the Black Hills aren't exactly known for their portrait potential. She was also drawn to the boys for the sense of scale they added to the rocky landscape.

After composing the scene and firing off a few shots, "I was delighted with how this boy's profile and fishing pole were so well defined," she says, deciding to render his figure as a strong silhouette. "To get that silhouette effect, you have to expose for the background and not your subject. As long as the background is brighter, your subject will be dark."

Silhouettes can be tricky, though. "You have to make sure that



LEXI COOPER Graduating from art school in spring 2015, Cooper plans a career in photography.

whomever or whatever you're photographing has a nice shape and form," Cooper says. "Since we can't see any detail in the subject, their outline needs to be interesting for the picture to be successful." It certainly is for this shot.

This picture is also helped by an important lesson she learned on one of her six Mentor Series treks. "I wanted to compose so the picture would have a clear foreground, middle ground, and background. I placed the distant rocks as the background, the water as the middle ground, and the fisherman as the foreground," she says.

Another strategy Cooper has picked up along the way? Before pressing the shutter release, she always checks the four edges of her viewfinder to make sure she's got everything in the picture that should be there—and nothing else.

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Fix It Fixes

I eagerly await your Fix It Fast column and wish you could provide more than one example per issue. It is one of the most valuable parts of your magazine. [But] I have a suggestion for improvement. When you show the "Before" pic smaller than the "After" pic, you are adding an element of distortion to the comparison since if you only enlarged a photo you would be improving it already. To truly compare the quality of two photos, they should be compared side by side—same size, same medium, same everything, except for the adjustments that were made to improve the photo.

Bob Hume

Roswell, GA

FROM FACEBOOK

WE SHARED an article from PopPhoto.com about the best way to watermark your photos, and this opened up a debate:

I don't really think watermarking is a case of whether it should look nice or not. It's there for a purpose, to protect your work.

—Chris Middleton

No watermarks! Let your style, quality, and originality be your mark! The best photos in history didn't need them.

—Yasira Jean Adams

If you make a watermark too small and place [it] in a corner, you are just inviting someone to crop the image and use [it]. I place my watermark dead center. Don't like? Tough.

—Paul Burrows

Watermarks protect nothing. I can edit them out in seconds. Post small-res files!

—James Miller



POPULAR PHOTOGRAPHY

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REPRINTS AND EPRINTS

For Reprints, email reprints@ bonniercorp.com. I AM WONDERING why in the Fix It
Fast section in the November 2014
issue Wesley Fulghum used a photo
that really didn't make sense to
use as an example. Even after his
adjustments it was almost impossible to tell what one was looking
at. While his "fixes" probably did
enhance the picture, it is hard to tell
because the image is so confusing. There must be a billion photos
around with recognizable content
that need help.

Dave Swatscheno
Hendersonville, NC

SINCE MOVING to Florida six years ago, I have made a hobby out of photographing such birds as egrets, herons, eagles, wood storks, and swallow-tailed kites. So I was quite interested in getting some tips from your "Fly-By Shooting" article (You Can Do It, November 2014). However, I found Paul Nelson's procedure to be a lot more complicated than mine, so I guess I'll stick to setting my Pentax K-2000 and K-30 cameras on auto and continue to click away. I have had some dandy (at least I think so) results. A few of the photos are on my blog: smittys stuff.blogspot.com. Neal Smith Naples, FL

I'VE BEEN enjoying Popular Photography forever. I have taken advantage of its conveyed expertise and even had a couple images printed some years back. Each month holds a period of high anticipation awaiting the current issue.

Question: Included in the Pentax K-3's performance results (January 2014) is a resolution of 2750 [at ISO 100]. As the K-3 has a controllable anti-aliasing simulator, can you tell me if it was tested with AA dialed on or off?

Jack Davis Yuba City, CA

EDITOR'S NOTE: We performed our lab tests of Ricoh's Pentax K-3 with its anti-aliasing mechanism turned off. In general, we do all testing with the camera using its default settings.



I JUST READ YOUR ARTICLE "HOW TO BUY A LENS" IN THE NOVEMBER ISSUE, which brought some questions to mind. I am often not sure how to interpret the information given [about a lens]. I have a Canon EOS Rebel T2i, which is an APS-C camera, but hope one day to get a full-frame camera. For now, I am investing in better glass, so I want to buy lenses that will eventually work on both sensors. For Canon, that is EF [full-frame] versus EF-S [APS-C] lenses. However,

when I look at other manufacturer's lens designations, I don't know which will work only on APS-C and which on both.

Joi S. Tannert
Murrells Inlet. SC

ANSWER: You're not alone! Many people find this confusing, especially when shopping across brands. Every manufacturer uses a different tag to distinguish between lenses built for full-frame DSLRs (which will also work on cameras with smaller APS-C-size sensors) and those built solely for APS-C bodies. You need to know the difference, because a lens made just for APS-C cameras will produce an image circle that's too small to cover the larger full-frame sensor. Also, when you use a full-frame lens on an APS-C body, the effective focal length will appear longer—this "crop factor" is 1.6X for Canon cameras and 1.5X for all others.

You are correct about Canon's designations. The others? Both Nikon and Tokina label full-frame lenses "FX" and APS-C lenses "DX." Sigma calls its full-framers "DG" and its APS-C lenses "DC." For its A-mount DSLRs, Sony does not have a special code for full-frame glass, but it designates its APS-C lenses "DT" (Sony's E-mount lenses for ILCs carry still other designations). And Tamron uses "Di" on its full-frame lenses and "Di II" on those made for APS-C.



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Summers on the East Coast are always filled with crowds of people escaping to the spotless shoreline of Long Island. Montauk, one of the most popular Long Island vacation spots, stretches across 5,000 acres of striking public beaches and diverse parkland, which makes it not only the perfect weekend getaway, but also a great destination to enhance your photography skills. With David Tejada and Reed Hoffmann, our Nikon professional photographers, you will enjoy an invaluable learning experience coupled with the distinct scenery and relaxing atmosphere that only Montauk can provide.

The Wölffer Estate Vineyard will serve as the first photography expedition of this photo series. The lush landscape of the vineyards mixed with the tasting room's old world charm is a flawless backdrop to any photo. After a delectable lunch and wine tasting, the Montauk Yacht Club, located on a private waterfront will conclude our first day as we photograph the many sailboats as they glide on the sunset soaked water.

Drive from Montauk to East Hampton to photograph models in a rich garden of the Home Sweet Home Museum. Then journey down the road to the Old Hook Windmill, a significant site set on plush, emerald grass surrounded by abundant trees. Finally, depart for the Montauk Lighthouse, a stunning, historic landmark that sits on a bluff overlooking the sapphire sea. The lighthouse, which still functions as a navigation guide today, has been apart of the Montauk seascape for over 200 years which makes this opportunity to photograph the lighthouse at sunset and sunrise incredibly meaningful.

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DAVID TEJADA



REED HOFFMANN

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EXPERT TIPS AND TECHNIQUES FOR BETTER PHOTOS

CREATIVE THINKING

SMOKE JOKE Portraits without faces? Yes you can!



IT JUST doesn't get any better than this: Your chain-smoking friend rolls up on his scooter smoking, or at least trying to smoke, despite a few basic laws of physics. Thus was this poignantly atmospheric mood envisioned, er, encapsulated by Seattlebased photographer Andy Reynolds as part of his ongoing series of portraits without faces. Displayed in the Trunk Show section of his website, the portraits are sad, scary, and funny all at the same time.

"They speak to my personal weirdness and penchant for frugality," Reynolds says jokingly. "I can use the same model twice, or friends, or family."

Reynolds admits he got the idea on a shoot when he had to use the same model twice but could show her head only once. "I realized that I could say something funny about a person or

For more of Reynolds's humorous photography, visit andy revnolds .com.

situation without actually showing who the person was.

HOW * CREATIVE THINKING

I didn't need to worry about embarrassing anyone that way."

When his friend showed up all James Dean–like with the motorcycle and garb, Reynolds immediately sensed the potential. "The irony is that I can respect his privacy and show that by smoking, he is dying but he is happy. Admittedly, it's kind of gross," he says.

The setup was a clean portrait on a loading dock exterior with a pack of Camels and some minimal lighting behind a big screen to soften and augment the available light. Reynolds used a Hasselblad 500C/M with a Phase One back and 80mm lens.

"We had this '70s-style helmet with a big windscreen, and my friend is just letting the smoke fill up the helmet, no artificial smoke added," Reynolds says. The hard part was getting the smoke to thicken enough in the slightly windy conditions that day—the breeze would take all the smoke out just before the helmet got full, and they would have to start over.

Reynolds tried different combinations of elements, taking some shots with eyes open and visible, some with the cigarette visible. "It was kind of comical as he blindly tried to position the cigarette and wound up singeing his fingers and lips," Reynolds says. "He wanted to try two cigarettes at a time, but we only got about three or four cigarettes in before he was too jacked up to go on—he said he [could feel] the nicotine in his eyes. It was like a nicotine eye patch."

As luck would have it, this shot with the dramatic smoke was one of the final captures. Only minimal postprocessing was needed to remove some marks on the windscreen itself.

—Laurence Chen

FIX IT FAST

CAST AWAY



Erasing a dreary blue hue

LAST MARCH, Michael Girod, a 29-yearold geophysics student from Burbank, California, captured the famous Tunnel View down Yosemite's Merced River Valley. But just as he got his Canon EOS 5D Mark II onto his Oben tripod, "the weather conditions changed rapidly and a big storm came through," he says. "Within minutes the valley filled with fog." Unfortunately, the fog brought with it an overly blue, lead-tinted light.
To expunge it, I brought the file into Adobe Camera RAW 8.6 and made a major move with the Temperature slider, from 4850 all the way to 16,500. Then came minor boosts to Tint, Contrast, Whites, Clarity, Vibrance, and Saturation, which I followed with pullbacks to Highlights, Shadows, and Blacks. Total fix time: a quick 10 minutes.

—Wesley Fulghum



DID YOU KNOW? 4K VIDEO RECORDERS

MORE AND MORE, the cameras we write about, including the Panasonic Lumix GH4, can capture ultra high-definition (UHD) 4K video. Many purchasers of such cameras don't realize, however, that their cameras don't save a full 4K signal to in-camera compact flash or SD cards. Both those storage media require compressing the signal, which can compromise definition. To capture true UHD 4K video, completely uncompressed, you will need to download the video directly to a tethered, stand-alone video recorder. Costing

between several hundred and several thousand dollars, video recorders typically accept an uncompressed video signal at up to 120 fps. The best, such as the ATOMOS SHOGUN (\$1,995, street, shown here) feature color-calibrated touchscreen monitors, which can display the 4K capture in real time.



WHEN INSPIRATION STRIKES, STRIKE FASTER.

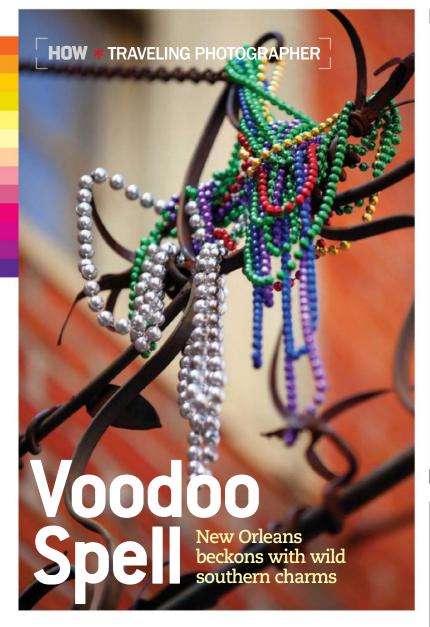
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AS PHOTOGRAPHER Kathleen

Parker says of her hometown, "New Orleans is a mixture of mystery, history, love, despair, decay, activity, and beauty. In this unique and compact city you can photograph them all."

Nearly a decade after Hurricane Katrina, the French Quarter's Jackson Square remains one of the city's most colorful, vibrant, and crowded gathering spots—a great place for people shots. The square is jammed with an eclectic mix of artists, from magicians and musicians to self-proclaimed mystics. "If you photograph a performer or entertainer there, you're expected to tip," Parker says.

(See her work at kathleen-k-parker .artistwebsites.com.)

The square's late-18th-century Spanish architecture is another visual draw. The Cabildo and Presbytere (both museums now) and the St. Louis Cathedral fill one side of the square. "The omamental sculpture on the Cabildo is particularly interesting," says Parker. She also recommends the Pontalba Apartments on the square: "The red brick buildings are decorated with the original lacy ironwork balconies and were built about 150 years ago." City Park, a 1.300-acre oasis in the heart of New Orleans with centuries-old live oaks, is another one of Parker's

BIGGER EASY

More places and events in and around New Orleans, in order of distance:

• THE KREWE DE JEANNE D'ARC PARADE French Quarter

This annual parade on January 6, dedicated to the city's French heritage, commemorates the birthday of Saint Joan of Arc. Its organizers describe it as "a poetic and theatrical experience for participants and viewers." The 2015 event starts on Decatur and proceeds along Chartres in the French Quarter; from 6 to 7:30 p.m. Bring a flash. <code>joanofarcparade.org</code>

- NINTH WARD REBIRTH BIKE TOURS The Lower Ninth Ward, one of the hardest-hit areas during Hurricane Katrina, is now making a remarkable physical and cultural comeback. Four-hour tours (often lasting longer) on cruiser-style bikes leave daily at 9:30 a.m. Along the way, stop at the former home of lifelong resident Fats Domino. \$60 per person; buy your own lunch along the route. ninthwardrebirthbiketours.com
- CHALMETTE BATTLEFIELD 8606 West St. Bernard Hwy., Chalmette Part of the Jean Lafitte National Historical Park and Preserve, this is the site of the January 8, 1815, Battle of New Orleans that ended the War of 1812. Highlight: Chalmette Monument, a 100-foot obelisk (open Fridays and Saturdays, 9 a.m. to 3:30 p.m.)—climb its 122 steps for a view. Visit Jan. 7–10 for special bicentennial events. Open Tue.—Sat., 9 a.m.–4 p.m. nps.gov/jela/battle-of-new-orleans-bicentennial.htm
- BAYOU SAUVAGE NATIONAL WILDLIFE REFUGE Accessed from I-10, U.S. 90, and U.S. 11 Just 15 minutes from the French Quarter, this 24,000-acre marshland is the largest urban wildlife refuge in the country. It's home to more than 25,000 migrating birds in the winter (340 species year-round), as well as white-tailed deer, otter, feral hog, nutria, mink, alligators, and turtles. The Ridge Trail (Route 90) has a 2/3-mile boardwalk and info klosk. fws.gov/bayousauvage

Robert Woitowicz grabbed this image while squeezing through the crowds in the **French Quarter** with a Canon **EOS 5D Mark III** and 70-200mm f/2.8L Canon **EF IS II USM** lens: 1/3200 sec at f/2.8, ISO 640

favorite spots. "Moss grows wildly on the ancient trees that are wider than a bus," she says. Best time to shoot: early morning or late afternoon, when the light slants in from behind. For an unusual perspective, take a gondola ride on the park lagoon (nolagondola.com).

Along the riverfront, travel pro Robert Wojtowicz (rwimages.com), who shot the image shown here, strolls the Moon Walk promenade. "Head to the Steamboat Natchez docks and to Woldenberg Park for shots of the steamboat, river, and the bridge over the Mississippi in the distance," he says. "Go in early morning for the steamboat in fog."

To catch streetcars in action, he explores the area near the corner of St. Charles and Canal streets. "The best time is early in the morning, when the streetcars still have all their inside lights on and the street lamps are on but there is enough natural light already for the background," he says. —Jeff Wignall

ROBERT WOJTOWICZ, RWIMAGES.COM







Double Duty Make your lights work harder

moves into the frame to assume a starring role in an image. Chris Conway, a 45-year-old amateur photographer and commercial printer from Merseyside, England, allowed his gear to do just that. The lights he used to illuminate his subject also contributed a graphically cool, staccato-like rhythm that spans the length of his frame. "It was actually a happy accident," he says.

"The image was taken during a portrait lighting workshop at my local camera club. The aim was to set up lights and let members explore portrait lighting basics. During the evening, my friend Neal Moran decided to use some props he'd brought along, namely the sunglasses, and this inspired me to try something creative," Conway says.

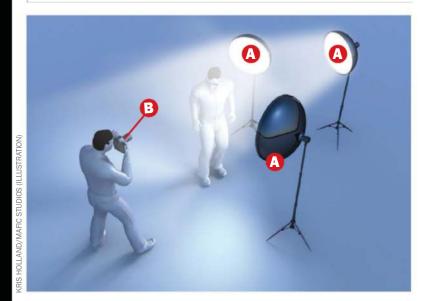
Moments before making this picture, the photographer was

Find more of Conway's images at chriscon photo.com. waiting in the wings while another shooter, positioned between the second and third lights (from left), photographed his friend. Standing there, Conway noticed the lights' polka-dot pattern. "When the other guy took a break, I asked Neal to look at my camera, and I moved slightly so that his head was centered in backlight behind him," Conway recalls.

If you'd like to emulate his technique, Conway has a few tips:

PUTTING LIGHTS IN THE PICTURE

COMPLEX



Chris Conway, an ambitious amateur photographer from the town of St. Helens in Merseyside, England, made this striking three-light portrait during a lighting seminar. He noticed how he might cleverly incorporate the lighting gear into the actual composition. The fixtures were three Bowens Streamlite 330 Fluorescent Lights (A), which produced identical outputs of 90W at 5600K. Conway shot with a Canon EOS Rebel T3i and a now-discontinued 28-70mm f/2.8 Tokina zoom (B), exposing for 1/80 sec at f/11, ISO 400. The crucial factor for this shot was the f/11 aperture setting. As mentioned in the text, f/11 prevented most of the detail from the room beyond from recording in the image. (In postproduction, he burned in the remaining detail to eliminate what the f/11 aperture couldn't.) The aperture setting also helped minimize lens flare, which could have been caused by the lights shining directly into the lens.

THE GEAR

Canon EOS Rebel T3i (\$500, street, body only)

Bowens Streamlight Fluorescent Light



Because of the meterbacklighting, recommends checking an image's histogram setups like

fooling

nature of

Conway

when

shooting

this one.

bright output from the lights, so it severely underexposed his subject. So Conway zoomed in to spotmeter the illuminated side of his subject's face. He locked in f/11 as his working aperture, adjusting ISO and shutter speed until he landed on a correct exposure. Conway chose f/11 because throttling down the aperture helped prevent unwanted room details from registering in the background of the image.

• Play with camera, light, and subject positions. "It helps to move around your subject and find different camera angles to create new and original images," says Conway, "and make sure the placement of lights relative to the subject and to each other is correct." He adds, "If my subject's head hadn't been perfectly central in the light behind him, the picture wouldn't have worked."

—Peter Kolonia

• Use continuous light sources.

"This portrait mainly came about because we were experimenting with continuous light sources that night," Conway notes. "It made the potential in this lighting setup easier for me to see." It also helped that the lights were identical, allowing him to easily produce the same light output from each.

• Meter carefully. This scene's contrast made metering difficult. The camera was reading the





Fixer-Upper

An application for fast retouching

THE NEED for portrait retouching is practically a given, even if your subject is nearly flawless and your photographic talents outstanding. But making your clients—or family and friends—look their best can be time-consuming. Anthropics' PortraitPro, recently updated to version 12, is an efficient, easy-to-use application that can make retouching quick and, when

used skillfully, bring out the best in your portrait subjects. With presets or sliders (the latter offer more control), you can eliminate skin imperfections, enhance your subject's features, adjust lighting, and even sculpt facial structure and change eye color. Moderation is key, though—in the end, you want your subject to look natural.

Several editions of PortraitPro are available, all of which provide extensive retouching Anthropics PortraitPro Studio Edition 12 lets you retouch far faster than you could in an ordinary image editor.

QUICK TIP

Before you begin, go to PortraitPro > Preferences. Make sure the boxes for Don't Save Over Original and Automatically Find Faces are checked. Check the box to have the program add the "_pp" suffix to saved images to identify the ones you've worked on. Review the other options and choose the ones that best fit your workflow.

tools. This tutorial shows the Studio Edition.

—Theano Nikitas

Step 1

Define your subject.

In the Control Panel, click Open Image and select a photo. Then click the button that best matches the age range and gender of your subject. Make sure View Before and After is selected so you can compare the two as you work. Unless you want to use the default preset as a starting point, go to Presets and click Reset to Original Image.

Step 2

Adjust outlines and points.

The software automatically identifies key facial features. To adjust outlines, move the mouse into the Before view. Click and drag the yellow squares and outlines to more accurately fit the subject's features. Pay close attention to the corners and centers. Note that you may need to modify outline positions as you retouch.

Step 3

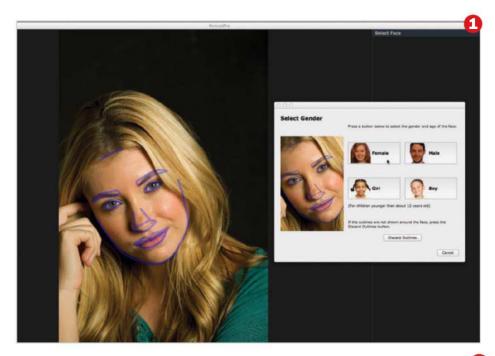
Tweak facial features.

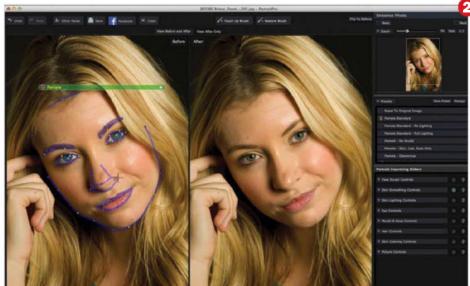
There's no set order for making adjustments, but we usually start with the details, such as the mouth, eyes, and nose. For instance: Under Portrait Improving Sliders, click Face Sculpt Controls > Mouth Shape. Move the sliders until you like the expression. We added a slight smile and adjusted this model's upper lip. Click the Face Sculpt Controls arrow to close that section. then switch to Mouth & Nose Controls. Increase lip saturation. darkness, and hue, then add shine with the Moisten Lips slider. Make other adjustments as

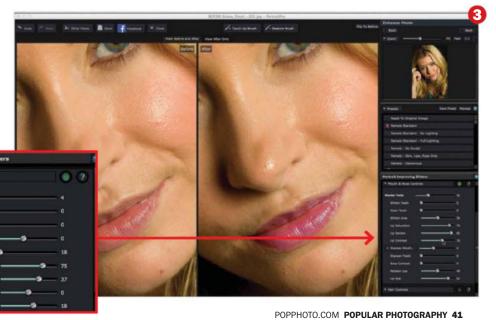
Portrait Improvers

needed

Use the sliders to adjust your subject's facial features. Each set of sliders has a fade that lets you tone down your fixes.







HOW * SOFTWARE WORKSHOP

Step 4

Smooth the skin.

Click the Skin Smoothing Controls > View/Edit Skin area. To mask the area of skin you want to adjust, first get the right brush size. Then select Extend or Cut Back to increase or decrease coverage as you paint the skin area you want to include or exclude. Watch the edges to avoid blurring details. Click OK to close the masking tools,

then choose Skin Texture Type and Spot Removal options from the drop-down menus. Adjust characteristics via the sliders. But don't overdo it!

OVCIUO IL.

Skin Editor

Use the Skin Smoothing Controls sliders to minimize wrinkles, pores, shine, and more.

Step 5

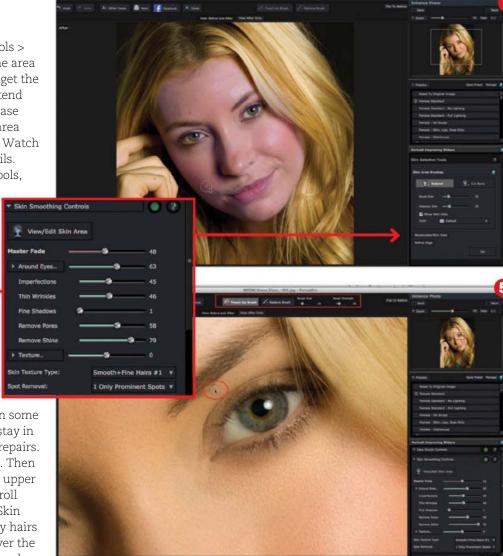
Touch up as needed.

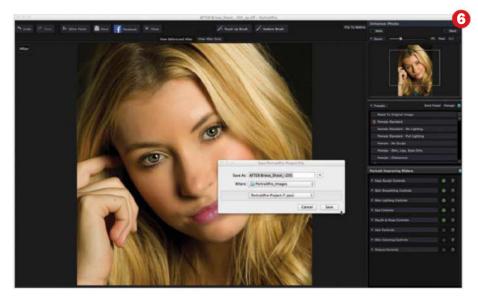
If skin smoothing went too far in some areas—or missed a few spots—stay in Skin Smoothing mode to make repairs. Switch to View After Only > 1:1. Then click the Touch Up Brush in the upper toolbar. Use the Navigator to scroll around and find anything that Skin Smoothing missed, such as stray hairs or imperfections. Then brush over the affected area. Use the Restore Brush to bring back some of the original skin texture where it's needed.

Final Step

Save your work.

When you're ready, save your image or save the session. The former (use Save As or Save JPEG/TIFF/PNG) will save the image in a standard file format. The latter saves a PortraitPro file as a session, which maintains the outlines, point positions, and slider values so you can continue working on the image when you reopen it. If you're unsure, save the image as a Session first, then choose Save JPEG/TIFF/PNG.







PUERTO RICO VIDEO WORKSHOP

A LOOK BACK AT OUR VIDEO ADVENTURE

here is no better way to experience the iconic grandeur, imposing architecture, lush forests, shimmering beaches, and heartfelt culture of Puerto Rico than by capturing it in quality HD video on advanced Nikon full-frame DSLRs. The recent Puerto Rico Mentor Series Video Workshop provided the tools and opportunity for trekkers to do just that. What took the adventure to another level was the expert, one-on-one mentoring provided by experienced Nikon professional photographer Reed Hoffmann and on-site editor John Considine.

The workshop began with a session by Reed on storytelling, the step-by-step methodology of creating and weaving video clips into a compelling visual narrative. Trekkers were then introduced to Nikon's DSLRs made available to them on-site, including a clear, concise description of all camera settings and functions for video capture. John Considine taught us how to manage video workflow, bring video clips to the computer and the ideas to consider when building a video story.

At El Yunque Rainforest trekkers photographed the beautiful flora and fauna while recording the unique sights and sounds. After a hike to La Mina Falls, one trekker decided to take a swim, providing a great video opportunity. Then at Luquillo Beach, three surfing instructors modeled in and out of the water as trekkers worked on building their Puerto Rico story. Next was San Cristobal, where part of the fortress was reserved for exclusive use, and trekkers captured video of two dancer pairs in colorful outfits in the beautiful evening light.

The next day we went to Camarero Race Track and stables, where we had behindthe-scenes access to capture the trainers exercising the horses, the jockeys' prep and a farrier shoeing a horse—all great scenes to practice our video storytelling. In Old San Juan we introduced a cultural element into our video story by adding scenes from an authentic cigar roller who told us the story of his unique work and life in Puerto Rico.

In the words of one happy trekker, "We visited dynamic locations, worked with fantastic models, and learned to create a video that captures the vitality of Puerto Rico and its people. The camaraderie was amazing."

This was a total-immersion course in visual expression wrapped in a seamlessly organized photographic adventure that we hope you can experience with us one





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Plan to Scan

A budget option for hi-res photos: scanography

FOR 67-YEAR-OLD former

photojournalist Larry Singer, the transition to fine art photography started with a feather. "I decided on September 1, 2014, to take a feather that I'd found while walking my dogs and see what would happen if I scanned it," says the Fort Lauderdale, Florida, resident. "When I enlarged it on my computer screen, I discovered my scanner was in reality almost the equivalent of a digital 8x10 view camera, only without a lens. It produced scanographs of incredible sharpness and detail."

The trick to scanning three-dimensional objects, Singer says, is finding interesting items with plenty of detail that are also fairly flat. Scanners, after all, don't offer much in the way of depth of field. He started by experimenting with flowers, feathers, leaves, and flattened soda cans, but it wasn't until three mushrooms, including the one opposite, popped up in his backyard after a heavy rain that he found true inspiration.

To create the image, Singer had to flatten the mushroom by gently bending and shaping its stem to make it appear straight without allowing it to break off.

The process of working with the mushrooms was a slow and careful one, but Singer knew it was worth the trouble when his scanography images quickly found a home on the walls of the Rossetti Fine Art Gallery in Wilton Manors, Florida. —Peter Kolonia

THE GEAR





Singer scanned with an Epson Perfection V500 (since replaced by the V550, A), and produced the black background by suspending a black flag like the one included in Westcott's Five-in-One Reflector Kit (B) above the scanner.

Step 1

Find your subject. The flatter the better. Since scanners are so good at capturing fine detail, look for objects that have lots of it

Step 2

Get your gear. "To create a scanograph, use a scanner that can be manually set to a resolution of at least 1200 dpi," says Singer. The Epson Perfection V550 is a good choice and costs only \$170. For scanographs with black backgrounds like this one, you'll also need a black flag to suspend above the subject during the scan.

Step 3

Set up the scanner. "Most of my scans are done at 800 dpi," says Singer. "Sometimes if I know that I'm going to crop into a subject, I will increase the dpi to 1200 and then reduce it to 300 when I begin working on the file in Adobe Photoshop CS 5 Extended." Another tricky part, he says, is keeping the glass screen as spotless as possible.

Step 4

Make your scans. Darken the room you're working in by turning off all the lights and closing any blinds. During the scan, suspend a black gobo or white reflector above your subject to obtain the desired background. Don't place them so close that any of their imperfections can be captured by your scan.

Step 5

Clean up your scanograph.

Capturing so much detail means tiny specks of dust and dirt are sure to show up on your scanned subject. "I work tirelessly with a Photoshop Healing Brush to make them disappear," says Singer. He also usually lightens white backgrounds and darkens black ones in post.





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CELAND JULY 1-10, 2015

MEET YOUR INSTRUCTORS



MARK AI BEDHASKY



LAYNE KENNEDY

"Traveling together in groups on photo treks is a fantastic way to share ideas, experience visual moments, and learn from others." - Layne Kennedy

JOIN THE MENTOR SERIES FOR A WORKSHOP IN ICELAND

In July 2015, the Mentor Series travels to Iceland as we set out to capture the unique and beguiling imagery of the Land of Fire and Ice. Nikon professional photographers Mark Alberhasky and Layne Kennedy will provide hands-on instruction in maximizing the use of natural light in this arctic location, where the sky fades seamlessly from sunset into sunrise during the summer months.

Our first stop will be Reykjavik, the capital and largest city of Iceland, where an inspiring high-tech, music, art and cultural scene has blossomed from the quiet fishing village at its core. Located in western Iceland, the modern city offers access to spectacular geothermal hotspots and some of the most breathtaking natural landscapes in Northern Europe.

From Reykjavik, we travel to Lake Mývatn, with its unusual lava formations, pseudo craters, and expansive bays. On Hrisey Island, we will focus on the

large colonies of seabirds and waterfowl that congregate there—from eiders, waders and passerine birds to the indigenous seagulls, puffins, and gannets. Next, we will explore the volcanic rock formations, natural ice sculptures and lava fields on a tour of the spectacular Lofthellir ice cave and the lava fields of Dimmuborgir. Summer is the best time of year for whale watching along the coast of the Atlantic and Arctic Oceans—we will be on the lookout for orca, humpback and blue whales, as well as white-beaked dolphins, harbor porpoises, seals and basking sharks during a whale watching cruise from Húsavík.

We complete our journey through Iceland with stops along the Tjörnes peninsula, Ásbyrgi canyon and at Dettifoss, Europe's mightiest waterfall, located in the northern part of Vatnajökull National Park, and spend a final afternoon soaking in the gem-colored geothermal waters of the Blue Lagoon. Join the Mentor Series for this unforgettable photo journey to Iceland. Sign up today!

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AF-S NIKKOR 24-70mm f/2.8G ED



D810



D750





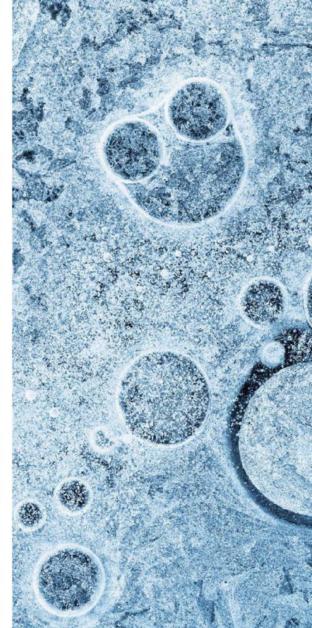


WAYS TO GET GREAT ICE

Frozen water makes an amazing subject. It's graphic, reflective, texturedand its sparkle mirrors the colors of its surroundings. Sure, there are a few considerations to keep in mind when working with ice, but the results are worth the effort.

Photos and text by Samantha Chrysanthou and Darwin Wiggett





See into the depths. If a lake or stream has frozen clear, mount a polarizing filter to your lens. By removing reflective glare, you'll be able to peer down into the lake's depths. Rocks, vegetation, bubbles, and even logs become wobbly and distorted when photographed through ice. To find clear ice, scout early in the winter before snowfall buries it. Later in the season, seek out areas where the wind has blown the snow off of the ice Of course before you venture out on frozen water, make sure it's thick enough (at least six inches) to hold your

body weight. Outfit your boots with trail crampons so you don't slip.

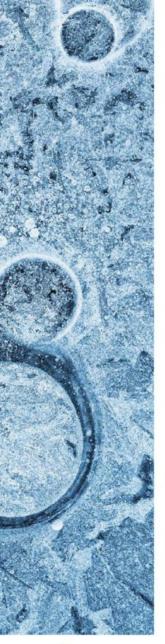
Forget color.
Winter scenery is often devoid of color, but you can make an amazing image solely from the interplay of dark and light tones. To help visualize the tonal contrast you'll capture, set your camera's picture style to shoot in monochrome—the images will appear on your LCD as black-and-white. Shoot in RAW plus JPEG mode so that your JPEG acts as a reference and the RAW file retains the information you need to make

POLARIZE

A polarizing filter (above left) let these photographers see deeper into Abraham Lake in Kootenav Plains, Bighorn Wildlands. Alberta. Canada. Shot with a Canon EOS-1Ds Mark III and 24mm f/3.5L II tiltshift Canon lens; 6 sec at f/11, ISO 100.

more advanced conversions. After processing, try toning your b&w image with a blue monochrome to evoke an icy chill.

Clutter kills pictures—a good photographer is a master of exclusion.
Clean, simple, graphic compositions work best with ice photography. It's easier to distill a scene to its essence with a telephoto or macro lens, as a wide-angle lens will see too much of the scene. No matter what lens you choose to use, keep simplicity as your mantra when shooting ice.





DECLUTTER

Icicles hang from frozen **Panther Falls in Banff National** Park, Alberta. Chrysanthou and Wiggett homed in on them using a Canon EOS-1Ds Mark III and a 15mm f/2.8 Canon EF fisheye lens. **Exposure was** 1/80 sec at f/10, ISO 400.

Use reflective contrast.

contrast. The human eye is attracted to contrast, whether it's found in color, tone. or both. To find contrast, look for a section of ice in the shade with a background that is lit by the sun. The ice will reflect the warm hues of the sunlit scene as well as portions of the blue sky, and the resulting interplay of warm and cool tones will add energy to your shot. Here is a case where you don't want to use your polarizer—it will remove the strong reflective highlights you're seeking to capture.

LOSE THE COLOR

The couple went for a monochrome abstract (above middle) on the North Saskatchewan River in Kootenav Plains, Alberta. using the 1Ds Mark III and a 90mm f/2.8 tilt-shift Canon lens. Exposure was 1/4 sec at f/8, ISO 100.

Record movement.

Ice is just water in solid form, and capturing it in both states simultaneously can be magical. Scout along the edges of streams and rivers for places where ice meets moving water. To enhance the contrast between static and dynamic elements, add a neutral density filter. Filters with five stops or more will dim the light that reaches your camera and allow for long exposure times of 1 to 30 seconds. Of course, such long exposures demand a solid tripod and remote release to ensure sharp results.

Don't forget that snow moves, too: Try a frozen, windswept lake with patches of exposed ice and swirling, blowing snow. Use longer exposures to capture streaking drifts against the solid ice.

Demonstrate scale.

With frozen waterfalls or big ice formations, it's often not enough to photograph the ice alone. To convey a sense of scale, add a person. If you're lucky enough to arrive when climbers are scaling frozen waterfalls, ask permission to make an image of their ascent. One caveat: Avoid the



"butt shot," where you stand below the climber and shoot upward. Side, straight-on, or top-down views are more exciting if you can manage to catch them. For safety, stay clear of the wide debris zone where ice and rocks tumble from climbers' axes and crampons. A wide-angle lens will bring in the surroundings for an environmental portrait of the climbers. What if there is no one to add scale to the shot? Here, again, a wide-angle lens will help: Use it to show a foreground element and put the background in context.

Find frozen nature.
The edges of streams and lakes harbor leaves, pinecones, and other vegetation suspended in ice. Dig out your macro lens and make abstract renditions of these captured objects. Use your polarizer to help remove the sheen from the ice and bring out details below the surface. Be sure to use an aperture that will give you the depth of field needed to maintain sharpness across your scene.

Light the background.
Ice is often most appealing when it's transparent. As with photographing glass, clear ice often

USE OBJECTS

Aspen leaf frozen on Abraham Lake in Kootenay Plains, Alberta. Shot with a Canon EOS Rebel T2i and a 17–50mm f/2.8 Sigma lens. Exposure was 1/13 sec at f/14, ISO 100. looks best when the background is lit and the ice itself is not. If the ice is in the shade but the background is being lit by the sun, get behind the ice and shoot through it. Try a shallow depth of field so only the ice is in focus and the background is a blur of color or tone. Use a greater depth of field to see a sharp background through the clear ice. However you choose to do it, shooting through the ice to a brighter background can produce a dynamic image.

Stay warm.
Finally, you won't be creative if you or your camera succumbs to the weather. To keep your camera in operation, nest a spare battery in an inner coat

pocket. When the battery in your

camera gets cold and threatens to give up, swap it out with the warm one. The cold one will soon warm up and regain its charge. When you're finished shooting, never go from the frigid outdoors to a warm environment without putting your camera in a plastic bag or zipping it tight in your camera bag. Let it slowly come up to room temperature—bringing a camera in from the cold without a buffer will cause condensation on and in your camera and lens.

When working in the elements, your hands and feet are the weakest links, so dress in layers. Thin silk gloves with hand warmers against the skin can serve as the first layer. Over these gloves, wear mittens attached to your coat sleeves. The attachments will allow you to pop your mittens off (without losing them) for fine camera adjustments; change the controls and dive back into the mitts to keep your hands warm between shots. Layer your socks with a thin silk sock as the first laver and a thicker woolen sock for extra insulation. Wear winter boots that aren't too tight to keep your tootsies from tingling and keep you out there shooting.

Photographers Samantha Chrysanthou and Darwin Wiggett run workshops and publish eBooks on their website, oopoomoo.com.

LIGHT THE BACK

Contrasting colors appeared in this ice rift. also shot at **Abraham** Lake. The pair used the 1Ds Mark III and a 120-400mm f/4.5-5.6 Sigma DG OS lens. Exposure was 1/80 sec at f/5.6. ISO 100.



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Sure, most of the talk these days is about mirrorless, but the DSLR is operating at its height. Case in point: the Nikon D750, which takes the trophy for 2014's Camera of the Year. By Philip Ryan

ANSEL ADAMS said that "somewhere along the line the manipulative freedom of the photographer must be arrested by the inescapable limitations of the medium." Among our great joys at Popular Photography is seeing those limitations begin to fall away as new cameras make it easier to capture ever-better images. With this in mind, we name the Nikon D750 2014's Camera of the Year.

We award Camera of the Year to the image-making machine that most refined or redefined photography in the past 12 months, as determined by our lab and field tests as well as overall performance and technological advancement. This year we mark the further refinement of the mid-level fullframe DSLR. As a body that appeals to both pros (often as a second camera) and serious amateurs (often as the best camera they've ever owned), the mightiest of these must be able to handle almost any shooting scenario. It should focus quickly, track your subjects well, employ a fast burst rate with an adequate buffer depth, and deliver highquality video. The camera's design must let you change all of the major settings quickly so that you don't miss a single moment. The Nikon D750 meets all of these qualifications with aplomb.

Nikon D750

Why It Won

- Excellent image quality with wellcontrolled noise as ISO rises
- Industry-leading 51-point 3D autofocus tracking system
- Burst rate of 6.5 fps for up to 87 JPEG or 15 RAW frames
- Built-in Wi-Fi for image transfer

 to—and control through—your
 mobile device
- Tilting 3.2-inch, 1,129,000-dot LCD screen with brightness control
- Well-designed, weather-sealed magnesium-alloy body
- HD video recording at up to
 1920x1080p 60 fps with clean
 HDMI out for external recorders

Two years ago, Canon's EOS 5D Mark III garnered our Camera of the Year award. At the time, we noted that Nikon's D810, its direct competitor, captured higher resolution but was, consequently, accompanied by more noise and slower bursts. While many shooters were happy with such extreme resolving power, plenty yearned for the versatility of higher ISOs and speedier bursts.

The D750 gives you all of the above. It out-resolves the 5D Mark III, captures bursts at 6.5 frames per second (compare this to the Canon's 6 fps), and keeps noise to Acceptable throughout its sensitivity range of ISO 50–51, 200. It maintains top honors in our

TOP NOTCH

NOTCH
Nikon's D750
is at the
head of the
pack in all
of the most
important
areas of
image
capture.

noise test up to ISO 800. Plus, Nikon's 3D AF tracking is simply the best focus tracking you can find in a DSLR or ILC.

Nikon has been listening to videographers and has incorporated features such as power aperture, which allows better shooting than when using a traditional DSLR or lens. Other video features include control over mic recording level and frequency response, a wind cut filter, and zebra stripes to warn of overexposure. It records full 1920x1080 HD video at 60 fps to output halfspeed footage in your final edit.

Another boon to those making moving pictures is the tilting 3.2-inch 1,129,000-dot LCD. The tilting makes shooting video more comfortable and can allow you to build a modestly priced video-shooting kit without an external monitor. This should prove appealing for filmmakers who prefer to keep costs down. Of course, we also found plenty of opportunities to make use of the tilt during live-view shooting of still images.

In addition to sporting a pop-up flash that can trigger off-camera accessory flashes—something that the 5D Mark III inexplicably doesn't include—the Nikon D750 has built-in Wi-Fi. In an age when information is expected to flow seamlessly between our devices, it's mind-boggling that some camera makers still don't include Wi-Fi in all of their models. Nikon has been guilty of excluding it from many DSLRs in the past, but the D750 has it. In addition to being able to transfer files to your smartphone or tablet, Nikon's Wireless Mobile Utility app lets you change a number of camera settings and capture images remotely—without touching the camera itself.

The Finalists

Dedicated video enthusiasts might wonder why we didn't award our trophy to Panasonic's \$1,698 Four Thirds-based 16.05MP Lumix GH4. As the first consumer-grade camera to offer 4K video recording at 30 fps, the GH4 offers something that few cameras in its price range do. Plus, it lets you record 4K to an SD card, while Sony's A7s, which also records 4K, requires an external recorder for 4K.

At the same time, while the GH4 delivers excellent image quality and does a nice job of controlling noise as sensitivity rises, it can't quite keep up with the D750's still-imaging prowess. The Nikon's ability to keep noise at Acceptable levels throughout its sensitivity range, while the GH4 reaches Unacceptable at ISO 12,800 and above, places the D750 at a distinct advantage.

Plus, the Nikon wins on resolution. The GH4 dips below our 2500 lines per picture height cutoff for an Excellent rating above ISO 400, while the D750 delivers 2850 lines at ISO 800. The Nikon focuses faster in very low light and employs tracking beyond the GH4's abilities.

To its credit, the GH4 has a great, highly customizable interface that offers just as much to shooters who embrace a touch-screen as it does to those who prefer buttons and dials. It's smaller and lighter than most DSLRs, though not by too much, and Micro Four Thirds lenses of similar speed and focal lengths are typically smaller and lighter than their APS-C or full-frame DSLR system counterparts. The

GH4 also boasts a monitor that flips out to the side and then tilts up and down, giving a wider range of angles than the D750's.

Fujifilm's \$1,200 APS-C-size 16.3MP X-T1 also impressed us enough to make its way into the final three. Like the GH4, the X-T1 couldn't keep up with the D750 in our Resolution test. The X-T1's best result was 2475 lines at ISO 200—the lowest sensitivity setting at which you can shoot RAW. In our tests, the X-T1 came up short controlling noise compared with the GH4 and the D750. However, with judicious application of noise reduction in a RAW converter such as Adobe Photoshop Lightroom, you can get better results than you would with the version of Silkypix that ships with the camera, which is what we used to convert the RAW images in our test.

RAW images in our test.

The charm of the X-T1,
though, is in its overall design.
Some shooters don't understand
why a photographer would
prefer the X-T1's whole-stop
shutter speed dial over the
multi-use command wheel, but
those shooters can easily use
one of the wheels or dials on
the X-T1 to perform that
function. Plus, if you're
shooting in aperturepriority mode,

then the shut-

ter speed dial

SILVER MEDALISTS Panasonic

Panasonic and Fujifilm each brought mirrorless ILCs with groundbreaking features. and exposure compensation dial work together to provide seamless access to those thirdstop shutter speeds.

Perhaps the best thing about the X-T1's controls is that you don't need a shooting mode dial. Set the aperture ring to A while the shutter speed dial is not set to A and you'll be in shutter-priority. Set them both to A and you're in program mode. This makes for quick switching between manual and other modes, freeing up space on the camera body for dedicated controls. As with the D750, the X-T1 has a tilting LCD and records video up to 1920x1080, 60 fps.

One of the X-T1's coolest features is its 0.5-inch, 2,360,000-dot OLED viewfinder, one of the largest we've seen in any camera with an EVF. It's so large that Fujifilm includes a mode that shrinks the image preview and places info to the side. The experience in the larger mode is quite immersive, and we spent most of our field-testing time



56 POPULAR PHOTOGRAPHY JANUARY 2015

RUNNER-UP: FUJIFILM X-T1

using it. Plus, this OLED finder has a particularly fast refresh rate. The stuttering that used to make it nearly impossible to pan the camera while looking through the EVF without inducing a headache is gone. It was often hard to tell we weren't looking at an analog image.

As with the other two finalists, the X-T1 has built-in Wi-Fi. Fujifilm's Camera Remote app provides access to some camera settings while also letting you trigger the shutter and transfer images to your mobile device. The X-T1's main drawbacks are its lack of a second memory card slot and the absence of a pop-up flash. Sure, it comes with the EF-X8 hot-shoe flash, but it would have been nice not to need it



All of our finalists are great cameras, but the D750 embodies the do-anything, rugged DSLR that remains the object of desire for most photographers. One Popular Photography staffer went so far as to wonder whether, given the growing prominence of mirrorless cameras, this will be the last DSLR

Year. While that probably won't be the case, we do expect that ILCs will continue to impress shooters of all kinds with innovative ideas and powerful bodies. Meanwhile, the D750 reminds us that DSLRs remain as relevant as ever

HONORABLE MENTIONS

Two Innovators

WHILE WE certainly love our finalists, this year also saw strong cameras from Ricoh and Samsung. In the case of Ricoh we saw its first foray into mediumformat CMOS: Its Pentax 51.4MP 645Z delivered a whopping 4425 lines per picture height in our test and will only set you back \$8,497 (body only). Sure, that's a lot of money. But it's nowhere near the tens of thousands vou'd have to spend for other CMOSbased medium-format digitals. Most of those other cameras don't have the 645Z's multi-point AF system, tilting LCD screen, high sensitivity settings, or familiar DSLR-style control layout. While the 645Z doesn't have the wide appeal, well-controlled noise, and overall versatility of the Nikon D750, it certainly deserves credit for helping to move medium-format photography back into the mainstream.

Although Samsung is poised to unleash a new flagship camera body to the world with its NX1, it was the NX30 that caught our eye when we tested it for our May 2014 issue. It served up Excellent-level resolution up to ISO 400, kept noise to Low or better up to ISO 3200, showed super-accurate color reproduction, and integrates very smoothly with smartphones thanks to its built-in dual-band Wi-Fi. Its 2,359,000-dot LCD EVF doesn't quite match the refresh rate of the Fuiifilm. but it comes really close. While Samsung cameras haven't always had the best reputation, the company has been working hard to step up in recent years, and the NX30 showed that it should be taken seriously. The NX30 also has an impressive array of lenses to go with the APS-C-based camera system. We expect Samsung to continue to give its rival camera makers plenty to be afraid of in the coming years.







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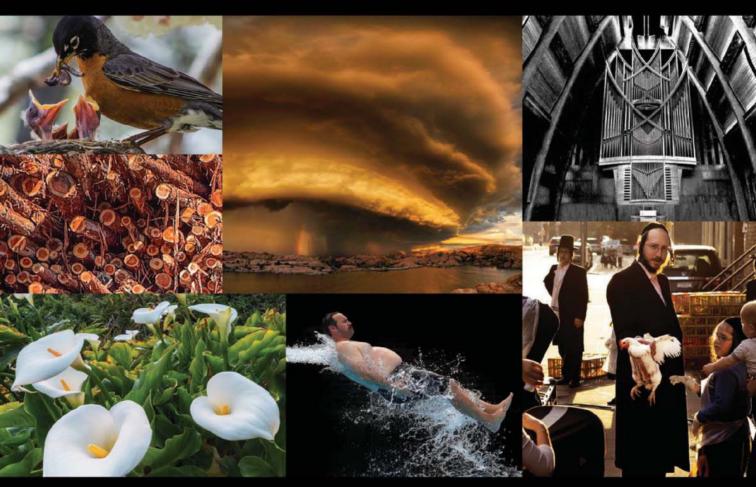
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The 21st Annual Readers'

CONTEST

From the wonder of nature in moments large and small, to stunning architecture and fascinating patterns, to life's humorous moments, this year's contest winners have captured—and created—some stunners. Read on for a visual feast, and to find out how readers like you made some truly great pictures.

By Jeanette D. Moses





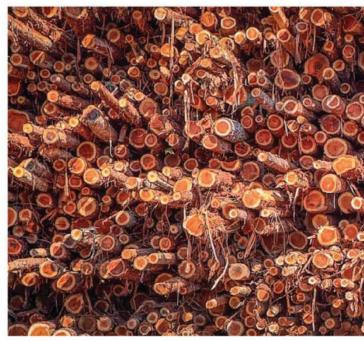
OBJECT/STILL LIFE

Ben Harder, 33, regional IT director, Alexandria, Virginia

Ben Harder was on a family vacation along Highway 101 in Northern California when he made this picture of raw tree trunks outside a lumber mill. Having grown up in Florida, Harder says, he saw his first lumber mill only a year ago and was drawn to the repeating patterns in the stacks of trunks. He wanted to give viewers a sense of their size and scale, which he accomplished by creating an HDR panorama.

This winning shot combines nine separate images.

TECH INFO: Canon EOS 7D with 17–55mm f/2.8 Canon EF-S IS USM lens; 1/250 sec at f/8, ISO 400 with bracketed exposures of −1, 0, +1. Edited in HDRsoft Photomatix Pro 5, Adobe Photoshop Creative Cloud, and Photoshop Lightroom 5.



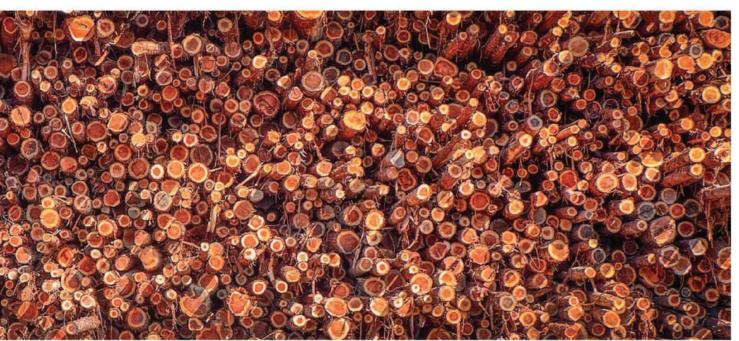


ANIMALS/NATURE

Jeffrey Langford, 67, music history professor, New York, New York

Patience was key to capturing this photo of a robin feeding its chicks in New York's Riverside Park. When Jeffrey Langford first noticed the nest, it was empty, but he seemed to remember a robin sitting there the week before. "I suspected it was out hunting for food for its little ones, which I couldn't see from where I was standing," he says. Ten minutes later the bird returned with a worm in its mouth. Working without a tripod, Langford extended his lens to the full 200mm and made this winning shot as the little birds popped up to eat.

TECH INFO: Nikon D7000 with 55-200mm f/4-5.6 IF-ED Zoom-Nikkor lens; 1/800 sec at f/8, ISO 400. Edited in Adobe Photoshop Lightroom 4 and Photoshop Elements 11.





ACTION/SPORTS

Krista Long, 45, clinical social worker, Des Moines, Iowa

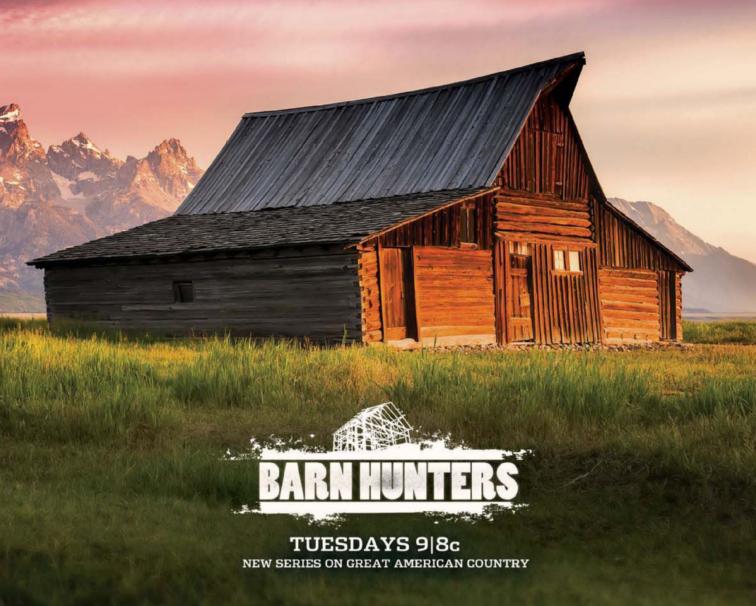
Last summer, Krista Long started shooting people riding this high-speed slide at a local water park last summer. "Bodies of all sizes, shapes, and ages flung one by one out of the blue tunnel, suspended briefly in mid air before crashing into the water below," she says. A fast shutter speed and a long lens allowed Long to capture riders as they shot out of the tube. Long removed the background of her images in Photoshop and replaced them with a flat black in order to emphasize the body shapes, facial expressions, and individual droplets of water. TECH INFO: Canon EOS 5D Mark II with 70-200mm f/2.8L Canon EF IS II USM lens; 1/8000 sec at f/2.8, ISO 400. Edited in Photoshop Creative Cloud.

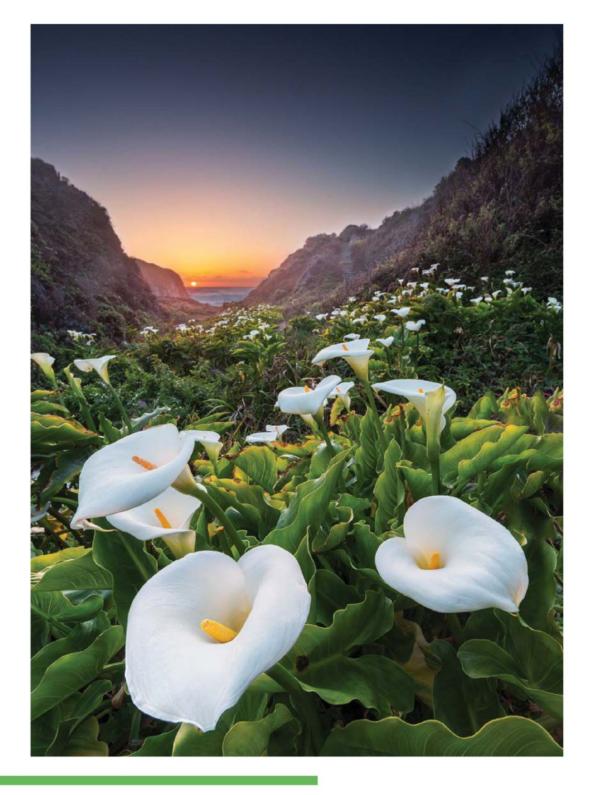




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LANDSCAPE/NATURE

Christopher Axe, 58, software engineer, Monterey, California

This winning image of calla lilies in Doud Creek at Garrapata State Park in Big Sur, California, was made by combining three exposures. Christopher Axe scouted the location before settling on this patch of calla lilies, which he thought "created a path to the setting sun." Using a wide-angle lens, he got as close to the flowers as possible and bracketed three shots as the sun was going down behind them. He combined the three exposures using Tony Kuyper's luminosity mask plugin and selection masks in Photoshop. **TECH INFO: Canon EOS 5D Mark III with 17–40mm f/4L Canon EF USM lens; 3 sec at f/16, ISO 50, with bracketed exposures of -3, 0, +3. Edited in Photoshop Creative Cloud and Lightroom 5.5.**





CITIES/ARCHITECTURE

Joe Constantino, 83, retired, New Port Richey, Florida

Inside a chapel while on a tour of Tampa University, Joe Constantino was drawn to the room's geometry—the strong vertical lines of the organ juxtaposed with the curves of the arched ceiling. "The arches surround the organ, making it an object to be protected," he says. He chose to frame the organ directly in the center of his picture to emphasize that cloistered feeling. He converted the shot to black-and-white and used a solarizing filter in Photoshop Elements 2 to finish the image.

TECH INFO: Panasonic Lumix FZ40; 1/125 sec at f/5.6, ISO 400. Edited in Adobe Photoshop Elements 2.



PEOPLE

Kieran Gosney, 29, freelance film editor, Edinburgh, Scotland

While walking the streets of Williamsburg, Brooklyn, in September of last year, Kieran Gosney stumbled upon a group of Hasidic men performing the *kapparot* ritual in preparation for Yom Kippur. "The scene was fairly chaotic, with feathers flying and children running all over the place," he says. Gosney chose to backlight his subjects to separate them in the scene and to add "an otherworldly glow" to the man clutching the chicken. He set his aperture wide enough to capture the teens in the background and took two quick shots before moving along. **TECH INFO: Panasonic Lumix GH2 with 45mm f/1.8 M. Zuiko Olympus lens; 1/400 sec at f/4.5, ISO 160. Edited in Photoshop Creative Cloud.**



GRAND PRIZE

Bob Larson, 50, behavioral health technician, Prescott, Arizona

Bob Larson wasn't intentionally chasing storms when he captured this massive shelf cloud moving over the Granite Dells at Willow Lake. "I couldn't believe what I was seeing through my viewfinder, but it became apparent fairly quickly that I wouldn't be able to fit the whole cloud formation in a single frame," he says. Larson



braced himself between two boulders on a cliff and started lining up his shots with the idea that he would stitch them together in Photoshop later. "The composition was a nobrainer; the process of bringing that composition to life was the big challenge," he says. His final winning image combines

16 shots and was adjusted to balance color, remove noise, and increase sharpness. **TECH INFO:** Canon EOS Rebel T2i with 10–20mm f/4 Sigma lens; 1/100 sec at f/9, ISO 100. Edited in Canon Digital Photo Professional, Imagenomic Noiseware noise removal, and Photoshop Creative Cloud.

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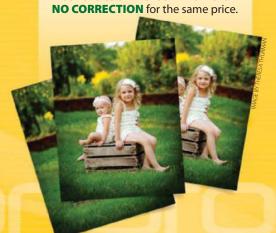
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THERE'S A REASON every system of lenses made by any serious lens maker includes a 24-70mm f/2.8 zoom, or something similar. This span of focal lengths covers a range of typical situations—it's wide enough for a landscape and just tele enough for portraiture with a large aperture for low light

and control of depth of field. The polished look such an aperture gives images is likely one of the reasons Panasonic chose to build a 24–75mm equivalent zoom with a fast f/1.7-2.8 maximum aperture into its new 12.8MP Lumix LX100. After all, if you're going to put a Four Thirds sensor

and 3.1X zoom in a small body

into a compact, you may as well use a lens that pours on the light.

Panasonic also had the good sense to include a 2,764,000-dotequivalent electronic viewfinder so you can immerse yourself in your image making. Add to all of that a very functional yet retro control system, and you've got a

LUMIX

12.8MP Four Thirds Live **MOS** sensor 24-75mm f/1.7-2.8 zoom 4K video **Burst capture** to 11 fps 2.764-milliondot EVF \$899, street







powerful, stylish camera that can give you most of what you'll need from a pocket model.

How are the images from this \$899 (street) compact? We think you'll be pleasantly surprised.

In the Test Lab

With a sensor substantially larger (nearly twice the surface area) than the 1-inch sensors found in many higher-end compact cameras, such as Sony's popular Cyber-shot RX100 series, the LX100 should have a lot going for it. At the same time, if you don't mind losing the zoom lens, you can opt for either the Nikon Coolpix A or Ricoh GR, both of which have APS-C-size sensors that are larger than the one in the LX100. Those cameras cost a lot less than this Panasonic, but the benefits of the LX100's zoom lens and EVF are big enough to make many photographers choose it.

In our lab tests, performed on uncompressed TIFF images converted from RAW files using the Silkypix software that ships with the camera, the LX100 earned an overall image quality rating of Very High from ISO 100 through ISO 1600.

The curveball that prevents it from achieving a higher overall rating is the color accuracy test, in which the LX100 came up just short of an Excellent rating. For each rating level below Excellent in that test, the overall image quality rating moves down one notch; so while the LX100 delivered an Extremely High rating in our resolution test and held noise to a Low or better score up to ISO 1600, its overall rating moved down to Very High.

PANASONIC LUMIX LX100

WHAT'S HOT

High-end performance & image quality

WHAT'S NOT

No built-in flash

WHO IT'S FOR

Shooters who favor image quality & performance but not swapping lenses

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LAB * CAMERA TEST PANASONIC LUMIX LX100

The LX100 earned its Extremely High resolution rating thanks to its ability to capture 2375 lines per picture height at ISO 100. It maintained that rating through ISO 3200, where it turned in 2275 lines. At ISO 12,800, it captured 2125 lines and at ISO 25,600 yielded 2000. For comparison, Sony's RX100 Mark II (we haven't yet tested the Mark III) topped out at 2280 lines at ISO 100 and fell to 1900 lines at its top sensitivity of ISO 12,800. Nikon's Coolpix A tops out at 2450 lines at ISO 100. While that's more than the LX100, it's not substantially more, and the Nikon out-resolved the Ricoh GR. So if you think you'll capture a whole lot more resolution by going with the Nikon or Ricoh's larger sensor, you're overestimating. The LX100 strikes a good balance between camera size and image quality.

In our noise tests, the LX100 doesn't reach Unacceptable until its top sensitivity of ISO 25,600. Noise steps up more seriously once you go above ISO 1600, but we made images that we liked at both ISO 3200 and 6400. For a real-world example, our Showcase photo (page 10) was shot at ISO 3200.

In the Field

While the Panasonic LX100 is larger than any of the other fixedlens cameras we've mentioned, its fast zoom lens and built-in EVF demand more room. Plus, a big sensor typically brings with it a bigger lens, compounding the challenges that Panasonic's engineers faced when designing this camera. The body is made mostly of aluminum, though a small plastic section was necessary to let the built-in Wi-Fi antenna function properly. There's no pop-up flash, but it does come with the FL70 accessory flash.

Though the grip isn't as large as you'd find on a DSLR or most ILCs, it proved effective thanks to its no-slip textured rubber. The control system employs rings, dials, and dedicated buttons, many of which can be customized. Like Fujifilm's cameras, the LX100 has a shutter speed dial that lets you set exposure time in full-stop increments. An exposure compensation dial lets you adjust in 1/3-stops covering +/-3 EV.

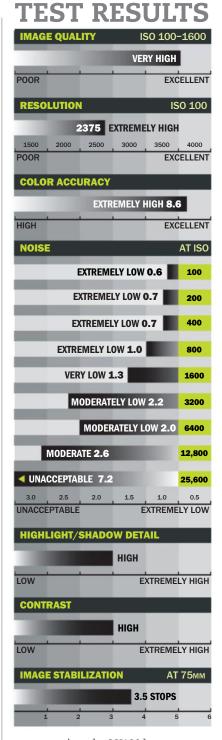
If the coarseness of selecting shutter speeds in whole stops makes you cringe, consider that in aperture-priority mode, if you dial in ISO and f-stop and your shutter speed lands on 1/250 sec, for example, you can adjust from 1/2000 through 1/30 sec using the exposure comp dial. That's plenty of leeway for the vast majority of situations. Furthermore, in manual mode, you can access the 1/3-stop shutter speeds using the wheel surrounding the directional keypad on the camera back.

Like all of Panasonic's LX-series cameras, the LX100 includes an aspect ratio switch on the top of the lens barrel. You can select from 4:3, 1:1, 16:9, or 3:2. Remember that you'll get the most out of the 4:3 ratio, mirroring the dimensions of the sensor, and that you can easily chop this down to 3:2 later for a 35mm look. If you're truly unsure of how to set this, you can use the camera's aspect ratio bracketing setting to capture various aspect ratios with a single press of the shutter release. It's a good tool to better appreciate the subtleties of aspect ratio. But we typically end up framing differently for different aspect ratios, so such bracketing seems of limited use.

The camera will also let you automatically bracket white balance and exposure. Plus it includes a multi-exposure mode for up to four exposures in one; black-and-white shooting with yellow, orange, green, or red filters; and in-camera RAW processing.

In addition to a dedicated

While you can capture 4K video to a SD card with the LX100, the HDMI output isn't active during video capture, so you can't mate it with an external recorder.



aperture ring, the LX100 has an assignable function ring on the lens barrel. You can use it to control ISO, white balance, filter selection, or zoom. You can also set it to step-zoom if you prefer to jump between various precise focal length equivalents. Surprisingly for Panasonic, the LCD is not a



















LAB * CAMERA TEST PANASONIC LUMIX LX100

touchscreen, nor does it tilt or articulate (perhaps to reduce bulk).

In burst mode, the camera can capture up to 11 frames per second, though you'll be shooting blind at that speed as it blanks out your view. If you opt for the medium setting of 7 fps, you can shoot with live view—the EVF does a good job of maintaining the view of your subject as the burst progresses, letting you pan along with a subject. The SH burst setting enables 40 fps but uses the sensor instead of the mechanical shutter to govern exposure time; it limits you to a maximum of 60 JPEG frames per burst while the other modes let you shoot up to the card capacity. RAW images can't be captured with SH burst, but the other burst modes let you get up to 10 RAW shots at a time.

Autofocus proved fast except in very low light and tracked subjects well for a compact camera.

Video shooters now have a very handy option to capture 4K video. The LX100 can record Ultra HD 4K footage at either 24 fps or 30 fps. Full 1920x1080p video can also be captured at up to 60 fps. The footage we shot looked quite nice, with little in the way of artifacts and only a mild amount of jello effect in very fast-moving subjects.

The Bottom Line

If you're looking for the highquality imaging and functionality of ILCs but don't want to switch lenses, the Panasonic Lumix LX100 could easily be the camera for you. For people looking to learn, it has most of what you'd need to wrap your head around the priciples of photography. Unlike some large-sensor compacts, it even has an effective macro mode that lets you focus as close as 1.18 inches.

We rarely encounter a compact camera that we'd feel comfortable

SPECIFICATIONS

IMAGING: 12.8MP effective, Four Thirdssize MOS sensor captures images at 4112x3008 pixels with 12 bits/color in RAW mode

STORAGE: SD, SDHC, and SDXC store JPEG. RW2 RAW. and RAW + JPEG files

BURST RATE: Full-size JPEGs (Fine mode), up to card capacity at 7 fps; RAW, up to 10 shots at 7 fps (with AF, metering, and live view enabled)

AF SYSTEM: TTL contrast detection with 49 selectable focus areas; single-shot and continuous AF with focus tracking and face detection

SHUTTER SPEEDS: Mechanical shutter: 1/4000 to 60 sec, plus B (1/3-EV increments); Electronic shutter: 1/16,000 to 1 sec

METERING: TTL metering with Intelligent Multiple (evaluative), centerweighted, and spot (size of spot unspecified)

ISO RANGE: 100–25,600 in 1- or 1/3-EV increments

FINDER: 0.38-inch, 2,764,000-dotequivalent with 100% accuracy; 1.39X (0.7X full-frame equivalent) magnification

VIDEO: Records at 3840x2160p 30 fps or 24 fps in MP4; up to 1920x1080p 60 fps in AVCHD; built-in stereo microphone; no microphone input

FLASH: No built-in pop-up; ships with FL70 flash with GN23 (feet, ISO 100)

LENS: 24–75mm (35mm equivalent) f/1.7–2.8 Leica DC Vario-Summilux zoom lens with optical image stabilization

LCD: 3-in. TFT with 921,000-dot resolution; 13-step brightness adjustment

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using in place of an ILC or DSLR.
But the LX100 has just enough
versatility, image quality, and highend performance to make us covet
it for general day-to-day shooting.
Sure, it might give you a bit of
sticker shock, but that will wear off
as soon as you start reviewing your
images.

—Philip Ryan

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AN ADVANCED COMPACT WITH A FLIP-UP SCREEN

DESPITE THE generalization that everyone has abandoned compact cameras for their smartphones, we continue to see fierce competition among high-end compacts. And if a camera company is going to make a compact these days, it had better have at least a 1-inch sensor.

Canon's PowerShot G7 X checks in with a 20.2-megapixel 1-inch CMOS sensor, 24-100mm equivalent f/1.8-2.8 lens, tilt-up 3-inch 1.040.000-dot LCD touchscreen. and built-in Wi-Fi. That last feature is very important for compacts, since it lets you port your images to a smartphone for sharing on social media. Canon's tilting screen can flip all the way up so that you can use it to frame a selfie.

But will a camera deliver images so much better than your smartphone that it's worth paying \$700 (street) for? From what we've seen, the answer is yes.

In the Test Lab

In our tests the Canon G7 X earned an overall image quality rating of Very High from its lowest sensitivity of ISO 125 through ISO 400. Resolution was the limiting factor for the sensitivity range on the overall rating. The G7 X started out with 2300 lines per picture height at ISO 125, but by ISO 800 resolution had

CANON POWERSHOT G7 X WHAT'S HOT Versatile zoom range, well-controlled noise WHAT'S NOT No finder, slow RAW bursts WHO IT'S FOR Anyone who wants better images without the mess of swapping lenses

PHILIP RYAN (LCD IMAGE)

fallen to 2175 lines, well below our cutoff of 2250 for an Extremely High rating. By ISO 6400, resolving power had degraded to 1850 lines, and at the camera's top sensitivity of ISO 12,800, it turned in 1650 lines. (To compare, while we haven't tested the latest iPhone when we tested the iPhone 4S it vielded 1730 lines at ISO 64.)

Another factor limiting the G7 X's overall image quality rating is its color accuracy result. The camera got an Extremely High rating with an average Delta E of 9.7. Sony's Cyber-shot RX100 Mark II, which also has a 1-inch sensor, fared much better in this test, with a 7.8 that earned it an Excellent rating. But even though the G7 X doesn't turn out color as accurately as many cameras. it's better than the 10.0 average Delta E that the iPhone 4S scored. (Many consumer-grade films scored in the range of 13 or more, so photographers aren't likely to balk at the colors from the G7 X.)

Where this Canon does a particularly good job is in controlling noise. It scored a Low or better noise rating all the way up to ISO 800 and reached an Unacceptable rating only at ISO 6400. The Sony maintained its Low or better rating up to ISO 200 and hit Unacceptable noise levels by ISO 1600.

It's safe to say that in any comparable situation, you'll be better off shooting stills with the Canon G7 X than you would with a smartphone. Plus, Canon seems to be getting better results from its foray into 1-inch-sensor compacts than Sony is right now (though we have not yet tested the RX100 Mark III)

In the Field

Small enough to fit in a jacket pocket, the G7 X definitely succeeds in sticking to compact dimensions. There's a well-placed curved ridge on the top right of

the camera back for your thumb to rest comfortably on, but no real grip on the front. The shell's finish has a nice texture, but some kind of rubberized grip would have been more user-friendly.

Between the touchscreen (which makes moving your focus area as simple as tapping the monitor), the control ring that surrounds the lens barrel, and the cluster of buttons on the back, we were able to change all of the camera's commonly used settings fairly quickly. Given the G7 X's size, Canon did a good job of designing its controls. There's even a Ring Function button that lets you cycle through the control ring's different functions and easily adapt it to whatever shooting scenario you encounter. We mostly used it to control ISO. since there's no other dedicated button for that and we tend to change it often. If you opt to use the ring for something else, ISO is easily accessible by pressing the Function Set button, which brings you to a control panel where you can adjust other common settings.

We love that Canon managed to fit both an exposure compensation dial and a mode dial onto the G7 X. More impressive is the built-in pop-up flash. Even though it has a meager output, so few camera makers now bother to include one that it feels special to see it here. Clever shooters can use it to trigger off-camera flashes, provided those accessories have optical slave triggers.

Burst shooting won't reach blazingly fast speeds, but you can get 4.4 frames per second with autofocus enabled, or 6.5 fps with AF locked after the first frame. Both of these assume that you're only capturing JPEGs, though—add RAW to the mix and burst shooting slows precipitously. That's not terribly surprising for a compact, but it could discourage

If you want to engage Wi-Fi when not in playback mode. there's a button on the right side of the camera that enables a connection to your smartphone.

TEST RESULTS **IMAGE QUALITY** ISO 125-400 VERY HIGH POOR EXCELLENT RESOLUTION ISO 125 **2300 EXTREMELY HIGH** 3500 4000 **EXCELLENT COLOR ACCURACY** EXTREMELY HIGH 9.7 HIGH EXCELLENT NOISE AT ISO VERY LOW 1.4 125 LOW 1.6 200 LOW 1.7 400 LOW 1.8 800 **MODERATELY LOW 2.2** 1600 **MODERATE 2.8** 3200 **UNACCEPTABLE 4.1** 6400 UNACCEPTABLE 5.5 12800 0.5 UNACCEPTABLE **EXTREMELY LOW** HIGHLIGHT/SHADOW DETAIL HIGH LOW EXTREMELY HIGH CONTRAST HIGH Iow EXTREMELY HIGH **IMAGE STABILIZATION АТ 100**мм **3.0 STOPS**

some more serious photographers. Video tops out at 1920x1080p and 60 fps. The footage we shot looked very nice for a compact. You shouldn't rely on it for a Hollywood production, but it's more than capable of capturing your vacations and family get-togethers.

Access to Wi-Fi is made simple with its own button during playback mode. The top of the

LAB * CAMERA TEST CANON POWERSHOT G7 X

navigation pad on the back of the camera gives you access to drive modes while capturing images or lets you jump into Wi-Fi while reviewing your handiwork. As usual, the initial setup to a smartphone is a bit of a process, but after that the access is smooth.

Since compacts almost always have to have some cute new feature. Canon included a few Star Shooting modes. In this mode you'll want to use a tripod or some other way to stabilize the camera. In Star Portrait mode, it takes two shots of your portrait subject and then a third of the starry night sky, then merges them into one star-studded portrait. There are also Star Trail, Star Nightscape, and Star Time-Lapse modes. The latter shoots a time-lapse at intervals of 15 seconds, 30 seconds, or 1 minute between shots for a duration of 60

minutes, 90 minutes, or until the battery runs out. The camera then assembles the time-lapse video for you at either 15 or 30 fps. Using the feature is actually less complicated than writing about it, and you'll get images or time-lapses that will likely impress your friends.

The Bottom Line

The Canon PowerShot G7 X produces solid image quality, performs well in all its tasks, and definitely makes better photos than you'll get from any smartphone while also handling many situations where a phone just wouldn't be able to capture the moment. Transferring images for sharing is fairly simple once you get it all set up, and the camera controls offer a decent level of flexibility.

Looking at the G7 X next to the Sony RX100 Mark III (\$798, street),

While the control rings found on some compacts are silent, the one on the G7 X clicks rather loudly.

SPECIFICA acts lient, (13 2x8 8mm) CMOS sens

IMAGING: 20.2MP effective, 1-inch (13.2x8.8mm) CMOS sensor captures images at 5472x3648 pixels with 12 bits/color in RAW mode

STORAGE: SD, SDHC, and SDXC store JPEG, CR2 RAW, and RAW + JPEG files

BURST RATE: Full-sized JPEGs (Fine mode), up to card capacity at 4.4 fps (with continuous AF and metering enabled) or 6.5 fps (AF and metering locked after first frame)

AF SYSTEM: TTL contrast detection with 31 selectable AF points; single-shot and continuous AF with focus tracking and face detection

SHUTTER SPEEDS: 1/2000 to 30 sec, plus B (1/3-EV increments); 1/2000 to 250 sec (only at ISO 125); 1/2000 to 15 sec in Tv mode

METERING: TTL metering with evaluative, centerweighted, and spot (size of spot unspecified)

ISO RANGE: 125–12,800 in 1/3-EV increments

VIDEO: Records at 1920x1080p 60 in MP4 H.264; built-in stereo microphone; no microphone input

FLASH: Built-in pop-up with autoflash covers approx. 1.6–23 feet with lens zoomed out to its widest; 1.3–13 feet with lens zoomed to telephoto

LENS: 24–100mm (35mm equivalent) f/1.8–2.8 zoom lens with optical image stabilization

LCD: Tilting 3-in. TFT with 1,040,000-dot resolution; five-step brightness adjustment

OUTPUT: Mini HDMI video (type D), composite video, and analog audio

BATTERY: Rechargeable NB-13L Li-ion, CIPA rating 210 shots

SIZE/WEIGHT: 4.1x2.4x1.6 in., 0.7 lb with a card and battery



ANOTHER F/1.8 PRIME FROM NIKON

NIKON CONTINUES to expand its tony line of f/1.8G prime lenses. This 20mm f/1.8G ED AF-S Nikkor (\$797, street) joins comparable G-series glass including the 28mm f/1.8G, the 35mm f/1.8G, and the 50mm f/1.8G.

A full-frame, FX-format ultrawide, the lens scales out of the ultrawide range on Nikon DX bodies, becoming a 30mm equivalent. The lens bears Nikon's ghost-busting Nano Crystal Coat. It also includes top-drawer glass, with two ED and two aspheric elements for improved control of chromatic aberration and linear distortion. A rubber cowling around the lens mount protects against dust and moisture. Like all G-series lenses, this new one does not have an aperture control ring.

At 3.19 inches long, the lens balanced nicely on our Nikon D4 test body. It is, however, considerably longer than the previous (but still available) 20mm AF Nikkor, an f/2.8, which measured a mere 1.68 inches. It is also larger in front, taking 77mm filters, versus 62mm filters for the older model.

Metal-bodied and rugged, our test lens delivered autofocus that was fast, accurate, and quiet enough for silent video clips. Its manual focus action was smooth and even, with a 90-degree turning

NIKON 20MM F/1.8G ED AF-S

WHAT'S HOT

Wide, fast, quiet, sharp & fairly priced **WHAT'S NOT**

Slightly below-average vignetting

WHO IT'S FOR

Nikon shooters who want the best wide/ultrawide in Nikon's catalog

radius that was just right. The lens shade can be reversemounted

On our optical bench, the lens returned Excellent-range SQF scores, indicating stateof-the-art levels of sharpness and contrast. Notably, these scores showed very little deviation across the aperture range—whether fully opened or stopped down, the lens delivered numbers that never left the 93rd percentile at our 11x14 benchmark.

.≘

Our DxO Analyzer 5.3 tests found Slight-range barrel distortion (0.25%)—considerably better than Nikon's 20mm f/2.8. which displayed 0.45% Visiblerange barreling. The new lens's subject magnification also dramatically trumped the old: 1:3.5 versus 1.86

One surprising outcome in our tests was this lens's struggle to control vignetting. Darkening didn't leave the image corners until f/6.3 compared with the older optic's f/5.6.

SPECIFICATIONS

20MM (20.47mm tested), f/1.8 (f/1.89 tested), 13 elements in 11 groups. Focus ring turns 90 degrees.

DIAGONAL VIEW ANGLE: 94 degrees WEIGHT: 0.83 lbs FILTER SIZE: 77mm

MOUNTS: Nikon AF

INCLUDED: Lenshood, soft pouch

STREET PRICE: \$797 WEBSITE: nikonusa.com

TEST RESULTS

DISTORTION: 0.25% (Slight) barrel **LIGHT FALLOFF:** Gone by f/6.3 **CLOSE-FOCUSING**

DISTANCE: 7.18 inches **MAXIMUM MAGNIFICATION**

RATIO: 1:3.53



3.24 in.

AMATEUR

This internaland rearfocusing lens boasts a barrel that neither rotates nor lengthens during use.

With its 70-degree angle of view (on a DX body), this 20mm is perfect for shooting a nearby mountain range or an extended family seated around a Sunday dinner table. In fact, it should meet any Nikonian's ultrawide-angle needs, including video. Its f/1.8 maximum aperture got us sharp handheld images of nocturnal street scenes. It also let us dramatically defocus backgrounds and play with perspective when working with subjects as near as 7.2 inches. We could isolate that close subject before a blurry background (at f/1.8) or mate it to a sharp background at f/16. Nice to have those kinds of options, right? —Julia Silber

Our standard lens test, SQF rates sharpno by print size

PRICE WISE

MIRRORLESS CAMERAS GET AN **ULTRAWIDE OPTION**

THIS 12MM f/2 NCS CS X APS-C format lens arrives as a welcome addition to the Rokinon-branded line of prime lenses from Samyang. Designed for mirrorless cameras (on an APS-C sensor, it's the full-frame equivalent of an 18mm), available for five mounts covering a range of sensor sizes, and attractively priced at \$399 (street), its practical features should make up for its lack of autofocus. We tested a Fujifilm X-mount sample on a Fujifilm X-T1 body.

The lens's fast f/2 maximum aperture is great for working in low light, and its broad 98.9-degree angle of view (83 degrees on Micro Four Thirds bodies) makes it perfect for architectural, interior, and landscape images. Its optical system offers three extra-lowdispersion elements along with one aspherical and one hybrid aspherical element.

We compared the Rokinon to the APS Zeiss Touit 12mm f/2.8, the Fujifilm 14mm f/2.8, and the Pentax 14mm f/2.8. Its main advantage is the maximum aperture of f/2—a full stop faster than the others. Despite that extra speed, the Rokinon is competitively light and petite. Made of high-strength aluminum

ROKINON 12MM F/2 NCS CS X

WHAT'S HOT

Ultrawide & super fast with a nice price **WHAT'S NOT**

No autofocus, stiff manual focus turn

WHO IT'S FOR

Mirrorless shooters craving an ultrawide angle of view

alloy, it weighs only about 2 ounces more than the Fujifilm and Zeiss glass. (The Pentax weighed almost twice as much as the others, 1.06 pounds.) Our Rokinon is a hair longer (at 2.33 inches) than the Fujifilm (2.32 inches), while the Zeiss (2.48 inches) and Pentax (2.73 inches) are noticeably longer.

The Rokinon's focusing ring was a bit stiff, but we found it easy to grip and enjoyed the 130-degree turning radius. Although this lens does not have electronic coupling, there is a workaround. Rokinon suggests putting the camera in Aperture Priority and setting the aperture directly on the lens. The camera will automatically respond with the fastest shutter speed possible for the working ISO. We suggest that you focus with the lens wide open before setting your aperture, because the viewfinder will dim as you stop down.

On the optical bench in the Popular Photography Test Lab, the

SPECIFICATIONS

12MM (12.47mm tested), f/2 (2.00 tested), 12 elements in 10 groups. Focus ring turns 130 degrees.

DIAGONAL VIEW ANGLE: 98.9 degrees WEIGHT: 0.63 lbs FILTER SIZE: 67mm MOUNTS: Canon M, Fujifilm X, Micro Four Thirds, Samsung NX, Sony E INCLUDED: Lenshood, lens pouch

STREET PRICE: \$399 WEBSITE: rokinon.com

TEST RESU

DISTORTION: 0.30% (Slight) barrel LIGHT FALLOFF: Gone by f/2.8 **CLOSE-FOCUSING**

DISTANCE: 7.5 inches **MAXIMUM MAGNIFICATION**

RATIO: 1:9.16

0.54 in. 0.8 1.6 2.33 in. 0.24 0.3 0.5 00 m 22 16 11 8 5.6 4 2.8 2

This 12mm ultrawide has Rokinon's Nano **Crystal Coat** (NCS) for controlling chromatic aberration.

lens earned Excellent-range SQF scores, even at maximum aperture.

In our DxO Analyzer 5.3 distortion tests, the Rokinon did surprisingly well. It was on the high side of the Slight range (0.30%)—a strong showing for an ultrawide, although the Zeiss Touit (0.04%) and the Fujifilm (0.02%) turned in significantly better numbers, dipping into the Imperceptible range. The Rokinon's vignetting and close-focusing fell mid-pack, while its maximum subject magnification of 1:9.6 (compare that to the Fujifilm's 1:6.91) was only adequate.

You should consider these drawbacks, though, through the perspective of price. The Rokinon 12mm f/2 costs about \$300 less than the lenses we compared it to. As far as we're concerned, that's one sweet bargain. —Julia Silber

Our standard lens test, SQF rates sharpness by print size

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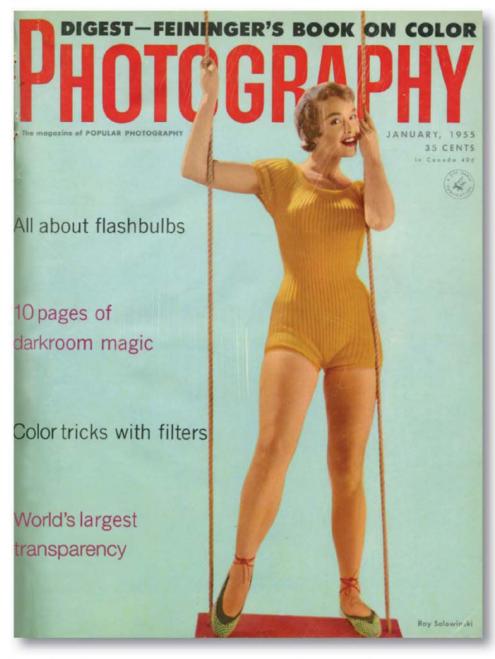
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Swing Time

A perky Helen Ryan started the New Year off on a sporty note, posing on a swing in the Carnegie Hall studio of New York fashion photographer Ray Solowinski. He took the picture with an Auto Rolleiflex and a 75mm f/3.5 Schneider Xenar lens on Kodak Ektachrome Daylight film. Two 1000-watt Strobo Research electronic flash units provided the light for an exposure of f/8.

60 YEARS AGO

The headline of a column written by a pair of attorneys asked, "The Nude—Is It Art?"

▼ Master Class

Alexey Brodovitch, art director of *Harper's Bazaar*, was also one of the most influential teachers of the 1940s and '50s, challenging a generation of gifted photographers



to "see" more creatively.
Writer David Job
Ebin describes how students responded to a class assignment

to photograph Penn Station, the results of which included this striking picture by Bernard Loughlin.



▲ Winter Abstract

New York's elevated line becomes a dramatic study in black-and-white through the lens of Arthur Lavine's Contax. While snow was falling, Lavine used a slow shutter speed to blur the flakes and printed on contrasty paper to emphasize the b&w design elements.

▼ Seal of Approval

A critical aspect of the growth of Japan's photo industry was the determined effort to assure top-quality products that matched the best its competition could offer.

A key element was the Japan Camera Inspection Institute (JCII), set up by the Japanese government to test and check all exports. This ad promoted the JCII as playing a major role in establishing Japan's reputation for photographic excellence.

—Harold Martin



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Page 2

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- Full HD 1080p Video Recording at 60 fps

Body Only #FUXT1B with 18-55mm Lens #FUXT11855B



FUJIFILM X-E2 Mirrorless System Camera

- Uses Fujifilm X Mount Lenses SDHC/SDXC Card Slot
- 3.0" LCD Digital Split Image and Focus Peaking
- 7 fps Continuous Shooting Built-In Wi-Fi

• Intelligent Hybrid AF System • Full HD 1080p Video Recording at 60 fps . Available in Black or Silver

Body Only #FUXE2* with 18-55mm Lens #FLIXE21855*



FUJIFILM X-M1 Mirrorless System Camera

- Full HD 1080p Video with Stereo Sound · Available in Black, Brown or Silver

Body Only #FUXM1* with Silver XC 16-50mm Lens #FUXM11650*



SAMSUNG NX Mini Mirrorless System Camera

- Micro 4/3 System 6 fps RAW Continuous Shooting
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- microSD, microSDHC, microSDXC Card Slot
- . Available in Black, Brown, Mint Green, Pink or White

with NX-M 9mm Lens #SANXM9L* with NX-M 9-27mm Lens #SANXM927*



1 J4 Mirrorless System Camera

- EXPEED 4A Image Processor Built-in Wi-Fi
- · microSD, microSDHC, microSDXC Card Slot
- Uses Nikon 1 Lenses 3.0" Touchscreen LCD
- 20 fps Shooting with Full-Time AF
- Full HD 1080p Video Recording at 60 fps
- · Available in Black, Orange, Silver or White





with 10-30mm Lens #NI1J41030*

1 V3 Mirrorless System Camera

- EXPEED 4A Image Processor Built-In Wi-Fi
- microSD, microSDHC, microSDXC Card Slot
 Uses Nikon 1 Lenses 3.0" Tilting Touchscreen LCD
- 20 fps Shooting with Full-Time AF ISO 12800
- . Full HD 1080p Video Recording at 60 fps

with 10-30mm Lens #N/1V31030



OLYMPUS OM-D E-M1 Mirrorless System Camera

- TruePic VII Image Processor Micro 4/3 System
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Body Only #OLEM1

OLYMPUS OM-D E-M10 Mirrorless System Camera

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- SDHC/SDXC Card Slot Built-In Wi-Fi
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- · Available in Black or Silver

with 14-42mm Lens #0LEM101442*



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mix G Vario Mirrorless System Lens

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· Available in Black or Orange



Panasonic. Lumix DMC-GX7 Mirrorless System Camera

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TALL 16 Mega

PENTAX K-3 DSLR Camera

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- . In-Camera Shake Reduction Stabilization
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- . Weather-Sealed Magnesium Alloy Body

Body Only #PEK3



23 Mega Pivels

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- 3 0" Tilting LCD Uses Sony F-mount Lenses . SDHC, SDXC, MS Pro Duo, MS PRO HG Duo
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- · Available in Black or Silver

Kit with 16-50mm OSS Lens #SOA6000*



SONY Alpha A7 Mirrorless System Camera

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- . Built-In Wi-Fi and NFC . Direct Access Interface
- Full 1080/60p with Uncompressed Output

Body Only #SOA7B Kit with 28-70mm Lens #SOA7KB



SONY Alpha SLT-A58 DSLR Camera

- 2.7" Tilting LCD Uses Sony Alpha mount Lenses
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 Full HD 1080i/o Video at 60 or 24fps
- . 5fps Full Resolution Continuous Shooting SteadyShot INSIDE Image Stabilization
- ISO 100-16000 with Noise Reduction

DT 18-55mm SAM II Lens #SOSITA58K



SONY a77 II DSLR Camera

- 3.0" 3-Way Tilting LCD 12fps Shooting
- Uses Sony Alpha mount Lenses
- Full HD 1080p Video Recording at 60 fps
- . SDHC, SDXC, MS Pro Duo, MS PRO HG Duo,
- XC-HG Duo Card Slot ISO 25600 . Built-In Wi-Fi Connectivity with NFC

Body Only #SOA772



LENSES AND FLASHES for DSLR & Mirroless Cameras

► TAMRON Six-Year Warranty Di for both digital and film SLR cameras Di-II for Digital SLRs Only Di III for mirror-less cameras Only SA = Sony Alpha N = Nikon P = Pentax ** Price After Rehate SKU# Avail. for Rebate Di-II 60mm f/2.0 LD IF Macro (55ø) 524.00 #TA602DI* C. N. SA #TA9028M* 90mm f/2.8 Macro (55ø) C, N, P, SA 90mm f/2.8 SP Macro VC USD (58ø) 180mm f/3.5 LD IF Macro (72ø) #TA9028VC 749.00 C, N, SA #TA18035* 739.00 **Di-II** 10-24/3.5-4.5 (77ø) **Di-II** 16-300/3.5-6.3 VC PZD (67ø) #TA102435 C, N, P, SA 499.00 #TA1630035DI* \$30 599.00** C, N, SA 17-50/2.8 XR LD IF Asph (67ø) 499.00 #TA175028 Di-II 17-50/2.8 XR VC LD IF Asph. (67ø) #TA175028*0 C. N 649.00 #TA1820035* 18-200/3.5-6.3 (62ø) C, N, P, SA 199.00 Di-III 18-200/3.5-6.3 VC (62ø) Di-II 18-270/3.5-6.3 VC PZD (62ø) #TA1820035S* SE Black or Silver 739.00 399.00* #TA18270* C, N, SA 24-70/2.8 VC USD (82ø) 28-75/2.8 XR (67ø) #TA247028* C. N. SA \$100 1,199.00** #TA287528* C. N. P. SA 499.00 28-300/3.5-6.3 XR LD (62ø) #TA2830035XD* C, P, SA 419.00 28-300/3.5-6.3 VC PZD (67g) #TA2830035DI* C. N. SA 849.00 #TA7020028M* C, N, P, SA 70-200/2.8 LD IF Macro (77ø) 769.00 70-200/2.8 SP VC USD (77ø) #TA7020028* C. N. SA \$100 1.399.00** C, N, P, SA 70-300/4-5.6 LD Macro (62ø) #TA70300M* 199.00 70-300/4-5.6 VC USD (62ø) #TA70300* C. N. SA 449.00 150-600/5-6.3 VC USD (95ø) #TA1506005* C, N, SA 1069.00 1.4x SP AF Pro Teleconverter #TA14XP 2x SP AF Pro Teleconverter #TA2XP* C. N 254.00

ZEISS Touit Mirrorless Lenses

These fully-compatible lenses with autofocus expand the capabilities of both the Sony NEX and Fujifilm X camera systems with outstanding optical quality.

	Fujifilm X	Sony NEX	Price
12mm f/2.8 (67ø)	#ZET2812X	#ZET2812E	999.00
32mm f/1.8 (52ø)	#ZET1832X	#ZET1832E	720.00
50mm f/2.8M (52ø)	#ZET5028MX	#ZET5028ME	999.00

Tokina

DX - for Digital SLRs Only FX - Designed for full frame DSLRs

		Canon EOS	Nikon AF	Price
FX	100mm f/2.8 Pro D Macro (52ø)	#T010028PCAF	#T010028PNAF	399.00
DX	10-17mm f/3.5-4.5 ATX Fisheye	#T0101735CAF	#T0101735NAF	599.00
DX	11-16mm f/2.8 Pro (77ø)	#T0111628PDXC	#T0111628PDXN	449.00
DX	11-16mm f/2.8 Pro II (77ø)	#T0111628PCII	#T0111628PNII	525.00
DX	12-28mm f/4.0 Pro (77ø)	#T012284DXC	#T012284DXN	489.00
FX	16-28mm f/2.8 Pro	#T01628FXC	#T01628FXN	639.00
FX	17-35mm f/4 Pro (82ø)	#T01735F4FXC	#T01735F4FXN	499.00

>	SIGMA							** Pric	e After Rebate	Rebates I	xpire 12-31-14
	OC – for Digital SLRs Only DG – Optimized	for Digital SLRs	DN – Designed t	or Mirrorless	Cameras.	C=	Canon MFT = Micro 4/3 N = Nikon O = Oly	mpus P = Pent	ax SI = Sigma SA =	Sony Alpha	SE = Sony E
Н	- HSM Model with Canon, Nikon, Sigma	Mount	SKU #	Rebate	Price		R – Rear Slip-in Gelatin Filter Slot	Mount	SKU #	Rebate	Price
DC	4.5/2.8 EX Circular Fisheye HSM R	C, N, P, SI, SA	#SI4528EX*	_	899.00	DC	10-20/3.5 EX HSM (82ø)	C, N, P, SI, SA	#SI102035*	_	649.00
DG	8/3.5 EX Circular Fisheye R	C, N, SI, SA	#SI835*	_	899.00	DG	12-24/4.5-5.6 EX Asph. HSM II	C, N, SI, SA	#SI122445*	\$75	874.00**
DC	10/2.8 EX Fisheye HSM R	C, N, P, SI, SA	#SI1028EXDC*	_	649.00	DC	17-50/2.8 EX OS HSM (77ø)	C, N, P, SI	#SI175028*	\$150	519.00**
DG	15/2.8 EX Diagonal Fisheye R	C, N, P, SA	#SI1528DG*	_	609.00	DC	17-70/2.8-4.0 OS Mac HSM TSC (72ø)	C, N, P, SI, SA	#SI1770284*	_	499.00
DN	19/2.8 (46ø) Black or Silver	MFT, SE	#SI1928DN*	_	199.00	DC	18-35/1.8 HSM (72ø)	C, N, P, SI, SA	#SI183518DC*	_	799.00
DG	20/1.8 EX DF RF Aspherical (82ø)	C, N, SI, SA	#SI2018*	_	629.00	DC	18-200/3.5-6.3 OS II HSM (72ø)	C, N, P, SI, SA	#SI1820035*	_	499.00
DG	24/1.8 EX DF Asph. Macro (77ø)	C, N, P, SI, SA	#SI2418M*	_	549.00	DC	18-200/3.5-6.3 OS Macro HSM (62ø)	C, N, P, SI, SA	#SI1820035D*	_	399.00
DG	28/1.8 EX DF Asph. Macro (77ø)	C, P, SI, SA	#SI2818M*	_	449.00	DC	18-250/3.5-6.3 OS Macro HSM (62ø)	C, N, P, SI, SA	#SI1825035M*	\$200	349.00**
DN	30/2.8 (46ø) Black or Silver	MFT, SE	#SI3028DN*	_	199.00	DG	24-70/2.8 EX IF HSM (82ø)	C, N, P, SI, SA	#SI247028*	_	899.00
DC	30/1.4 HSM (62ø)	C, N, P, SI, SA	#SI3014DCHSM	* _	499.00	DG	24-105/4.0 OS HSM (82ø)	C, N, SI, SA	#SI24105*	_	899.00
DG	35/1.4 HSM (67ø)	C, N, P, SI, SA	#SI3514*	_	899.00	DC	50-150/2.8 EX APO OS HSM (77ø)	N	#SI5015028*	_	989.00
DG	50/1.4 EX HSM (77ø) H	C, N, SI, SA	#SI5014*	\$100	399.00**	DG	50-500/4.5-6.3 APO OS HSM (95ø)	C, N, P, SI, SA	#SI505004563*	\$150	1,509.00**
DG	50/1.4 HSM (77ø) H	C, N, SI, SA	#SI5014A*	_	949.00	DG	70-200/2.8 EX APO OS HSM (77ø)	C, N, P, SI, SA	#SI7020028*	\$200	1,199.00**
DG	50/2.8 EX Macro (55ø)	C, N, SI, SA	#SI5028MDG*	_	369.00	DG		C, N, P, SI, SA	#SI703004*	\$25	144.00**
DN	60/2.8 (46ø) Black or Silver	MFT, SE	#SI6028DN*	_	239.00	DG	70-300/4-5.6 APO Macro (58ø)	C, N, P, SI, SA	#SI703004DG*	_	179.00
DG	70/2.8 EX Macro (62ø)	C, N, P, SI	#SI7028MDG*	_	499.00	DG	120-300/2.8 OS HSM (105ø)	C, N, S	#SI120300*	_	3,599.00
DG	85/1.4 EX HSM (77ø)	C, N, P, SI, SA	#SI8514*	_	969.00	DG	120-400/4.5-5.6 APO OS HSM (77øR)	C, P, SI	#SI120400*	_	899.00
DG	105/2.8 EX Macro OS HSM (62ø)	C, N, SI, SA	#SI10528MDG*	\$300	669.00**	DG	150-500/5-6.3 APO OS HSM (86ø)	C, N, P, SI, SA	#SI150500*	\$200	869.00**
DG	150/2.8 EX APO Macro OS HSM (72ø)	C, N, SI, SA	#SI15028AM0*	_	1,099.00	DG	1.4x EX APO Tele-Converter	C, N, S	#SI14XDG*	_	249.00
DG	180/2.8 EX APO Macro OS HSM (86ø)	C, N, SI, SA	#SI18028AME0	· —	1,699.00	DG	2x EX APO Tele-Converter	C, N, S	#SI2XDG*	\$50	249.00**
DG	300/2.8 APO EX HSM (46ø Rear)	C, N, P, SI, SA	#SI30028DG*	_	3,399.00		SIGMA	A FLAS	HES		
DG	500/4.5 APO EX HSM (46ø Rear)	C, N, P, SI, SA	#SI50045DG*	_	4,999.00	DG	EF-610 ST	C, N, P, SI, SA	#SIEF610ST*	\$30	135.00**
DC	8-16/4.5-5.6 HSM	C, N, S	#SI8164556*	\$50	649.00**	DG	EF-610 Super Flash	C, N, P, SI, SA	#SIEF610*	\$30	225.00**
DC	10-20/4-5.6 EX HSM (77ø)	C, N, P, SI, SA	#SI102045D*	\$80	399.00**	DG	EM-140 TTL Ringlight	C, N, P, SI, SA	#SIEM140DG*	_	379.00



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- Hands-on demos
- Convenient free parking available





Camon Digital Rebel T5i DSLR

- 3.0" Vari-Angle Touchscreen LCD
- Uses Canon EF Lenses (1.6x factor)
- SD/SDHC/SDXC Card Slot
- . STM Lens Support for Quiet AF in Movies
- Full HD 1080 Video with Continuous AF
- ISO 100-12800, Expandable to 25600



Rebates Expire 11-22-14	Price	Rebate	Final Cost
Kit with 18-55mm IS STM #CAEDRT5IK	849.99	\$150	699.99
T5 Kit with 18-55mm IS II #CAEDRT5K	549.99	\$50	499.99
T3i Kit with 18-55mm IS #CAEDRT3IK	599.99	\$50	549.99

Canon EOS-70D DSLR

- . Dual Pixel CMOS AF with Live View
- DIGIC 5+ Image Processor
 SD/SDHC/SDXC Card Slot
- Uses Canon EF & EF-S Lenses
- 3.0" Vari-Angle Touchscreen
- 7 fps Continuous Shooting . Built-In Wireless Connectivity

• Full HD 1080p Video



Rebates Expire 11-22-14	Price	Rebate	Final Cost
Body Only #CAE70D	. 1,199.00	\$200	999.00
Kit with 18-55mm STM #CAE70D1855	.1,349.00	\$200	1,149.00
EOS 60D Body Only #CAE60D	899.99	\$200	699.99
EOS 60D Kit with 18-135mm IS #CAE60D18135	. 1,199.00	\$200	999.00

Canon EOS-7D Mark II DSLR

- 3" Clear View II LCD Native ISO 16000
- Dual Pixel CMOS AF with Live View
- Dual CF and SDHC/XC Card Slots
- Continuous 10 fps Shooting
- Built-In GPS Receiver & Digital Compass
- Full HD 1080p/60 Video





Canon EOS-6D DSLR

- Full-Frame CMOS Sensor 3.0" LCD
- DIGIC 5+ Image Processor
- Uses Canon EF Lenses
- . SD/SDHC/SDXC Card Slot . Built-In Wi-Fi and GPS Connectivity
- Full HD 1080p with Manual Controls
- Extended ISO Range of 50-102400
- Up to 4.5 Full Resolution FPS
- . Built-In HDR & Multiple Exposure Modes



Rebates (Mail-in) Expire 11-22-14	Price	Rebate	Final Cost
Body Only #CAE6D	1,899.00	\$200	.1,699.00
(it with 24-105mm f/4 L #CAE6D24105	2,499.00	\$200	.2,299.00

Catton EOS-5D Mark III DSLR

- 3.2" Clear View High Resolution LCD
- DIGIC 5+ Image Processor
- 61-Point High Density AF
- · Uses Canon EF Lenses
- . Dual CF, SD Card Slots • Full HD 1080/30p & 720/60p Formats
- Extended ISO Range (50-102400)
- Built-In HDR & Multiple Exposure Modes





Body Only #CAE5D3*	3,399.00	\$200 3,199.00
Kit with 24-105mm L IS #CAE5D324105	3,999.00	\$200 3,799.00

Canon EOS-1Dx DSLR

- Dual DIGIC 5+ Image Processors
- Magnesium Alloy Body
- Eye-Level Pentaprism Viewfinder
- 3 2" LCD Monitor
- · Uses Canon EF Lenses
- Dual CF card slots
- 1920 x 1080 HD Video Capture
- Live View Still and Video Recording
- 61-Point High Density Auto Focus

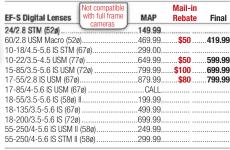


Rebates (Mail-in) Expire 11-22-14	Price	Rebate	Final Cost
Body Only #CAE1DX*	6,799.00	\$800	5,999.00

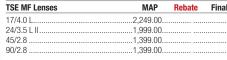
Rebates (Mail-in) Expire 11-22-14 — Call for Current Rebates & Promotions

Canon SLR Lenses and Flashes

EOS Flash System	MAP	Rebate	Final
270EX II			
320EX			
600EX-RT			
MR-14EX II Ringlight			
MT-24EX Twin Flash	829.99	\$60	769.99



		Mail-in	
EF Lenses	MAP	Rebate	Final
20/2.8 USM (72ø)			489.99
24/2.8 IS USM (58ø)			
28/1.8 USM (58ø)	509.99	\$60	449.99
28/2.8 IS USM (58ø)	549.99	\$100	449.99**
35/2 IS USM (67ø)			
40/2.8 STM Pancake (52ø)			
50/1.8 II (52ø)	125.99	\$20	105.99
50/2.5 Macro (52ø)			
50/1.4 USM (58ø)	399.99	\$50	349.99
MP-E 65/2.8 1x-5x Macro (58ø)	1,049.00	\$100	949.99
35/1.8 USM (58ø)	419.99	\$50	369.99
100/2 USM (58ø)	499.99	\$100	399.99*
100/2.8 USM Macro (58ø)	599.99	\$50	549.99
400/4.0 DO IS II USM (52ø)	6,899.00		
24-105/3.5-5.6 IS STM (77ø)	599.00		
28-135/3.5-5.6 IS USM (72ø)	CALL		
70-300/4-5.6 IS USM (58ø)	649.99	\$250	399.99*
70-300/4.5-5.6 DO IS USM (58ø)	1,399.00		
75-300/4.0-5.6 III (58ø)	199.99		
75-300/4.0-5.6 III ÙSM (58ø)	234.99		









		Mail-in	
EF "L" Lenses			
14/2.8 USM II	2,249.00	\$100	2,149.0
24/1.4 II (77ø)			
35/1.4 USM (72ø)			
50/1.2 USM (72ø)			
35/1.2 USM II (72ø)	2,099.00	\$100	1,999.0
100/2.8 IS USM Macro (67ø)			
135/2.0 USM (72ø)	1,049.00	\$50	999.0
180/3.5 USM Macro (72ø)	1,499.00	\$50	1,449.0
200/2.8 USM II (72ø)	779.99	\$30	749.9
200/2.0 IS USM (52ø)	5,999.00		
300/4.0 IS USM (77ø)	1,449.00	\$100	1,349.0
300/2.8 IS USM II (52ø rear)	6,599.00		
400/5.6 USM (77ø)	1,339.00	\$100	1,239.0
400/2.8 IS II (52ø rear)	10,499.00		
500/4 IS USM II (52ø rear)	9,499.00		
600/4.0 IS II (52ø rear)	11,999.00		
3-15/4.0 Fish-eye USM	1,349.00	\$50	1,299.0
16-35/4 IS USM (77ø)	1,199.00	\$100	1,099.0
16-35/2.8 USM IÌ (82ø)			
17-40/4.0 USM (77ø)			
24-70/4.0 IS USM (77ø)	999.99	\$250	749.99
24-70/2.8 II USM (82ø)			
24-105/4 IS USM (77ø)			
28-300/3.5-5.6 IS USM (77ø)			
70-200/4.0 USM (67ø)			
70-200/4.0 IS USM (77ø)			
70-200/2.8 USM (77ø)			
70-200/2.8 IS II USM (77ø)			
70-300/4.0-5.6 IS USM (67ø)			
100-400/4.5-5.6 IS USM (77ø)			
EE Tologopyowtowo	MAP	Dobato	Einal

EF Teleconverters	MAP	Rebate	Final
1.4x III	449.99		
2x III	449.99		

** with purchase of EOS-6D, 7D, 7D mkll, 70D, or 60D



Nikon D3300 DSLR

- EXPEED 4 Image Processor
- Full HD 1080p Video Recording
- 3.0" LCD 5 fps Shooting
- . Uses Nikon AF Lenses (1.5x factor) . SD/SDHC/SDXC Card Slot
- Expandable ISO 25600
- · Easy Panorama Mode and Guide Mode
- · Nikon Inc. limited warranty included



Up to \$250

Up to \$450

REBATE!

24 Mega

D3300 is available in Black, Grey or Red	Price	Rebate	Final Cost
Kit with 18-55mm VR II #NID33001855*	646.95	\$100	546.95
D3200 Kit Black w/18-55mm VR #NID32001855	*529.95	\$50	479.95

Nikon. D5300 DSLR

- EXPEED 4 Image Processor
- . Full HD 1080p Video at 60 fps
- 3.2" Vari-Angle LCD ISO 100-25600
- . Uses Nikon AF Lenses (1.5x factor)
- . SD/SDHC/SDXC Card Slot
- . Built-In Wi-Fi and GPS Connectivity
- · Nikon Inc. limited warranty included

Rebates Expire 11-22-14				24 Mega Phosis
D5300 18-55 Kit is available in Blac	k, Grey or Red	Price	Rebate	Final Cost
Kit with 18-55mm VR II (B, G, F	R) #NID53001855*	896.95	\$50	846.95
Kit with 18-140mm VR (Black)	#NID530018140	1,299.95	\$250	1,049.95
D5200 Kit with 18-55mm VR	#NID52001855*	799.95	\$200	599.95

NIXOM. D7100 DSLR

- Magnesium Allov Body
- . Moisture Resistant
- EXPEED 3 Image Processor
- 1080p Full HD Video Capture
- Accepts Nikon AF Lenses (1.5x factor) • 3.2" LCD
- . Dual SD/SDHC/SDXC Card Slots
- . Built-In Flash with Commander Function
- . Nikon Inc. limited warranty included

Rebates Expire 11-22-14	Price	Rebate	Final Cost
Body Only #NID7100	1,199.95	.\$250	949.95
Kit with 18-140mm VR DX #NID710018140	1,696.95	\$450	1,246.95

Nikon. D750 DSLR

- . FX-Format (Full-Frame) CMOS Sensor
- Uses Nikon AF Lenses 3.2" Tilting LCD
- . EXPEED 4 Image Processor
- SD/SDHC/SDXC Card Slot
- . Built-In Wi-Fi Connectivity
- Full HD 1080p Video Recording at 60 fps
- · Nikon Inc. limited warranty included



Nikon D810 DSLR

- FX-Format CMOS Sensor 3.2" LCD
- EXPEED 4 Image Processor
- . Optical Low-Pass Filter
- . CF & SD Dual Card Slots
- Nikon F Mount Lens Mount • Expandable Sensitivity to ISO 51200
- Full HD 1080p Video at 60/30/24 fps
- External Mic and Headphone Inputs
- Continuous Shooting to 5 fps in FX Mode
- . Multi-CAM 3500FX AF Sensor w/51 Points
- . Nikon Inc. limited warranty included

.3,296.95 Body Only #NID810.....



RFRATFI

36 Mega

NIMON D4s DSLR

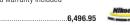
- · FX-format (full-frame) CMOS Sensor
- 14-Bit RAW Files & 12-Bit RAW S Format • 3.2" LCD
- Full HD 1080p Video at 60 fps
- EXPEED 4 Image Processor
- . Compatible with Most Nikkor Optics
- 11 fps Shooting for 200 Shots with AE/AF • ISO 50-409600
- . CF Type 1 & XQD Compatible
- 1000 Base-T Gigabit Wired LAN Support
- · Nikon Inc. limited warranty included

D-Type AF Lenses

50/1.4 D (52ø).

.6,496.95

Body Only #NID4S.....





Rehate

Price

16 Mega

Final

Nikon SLR Lenses and Flashes

Rebates Expire 11-22-14 — Call for Current Rebates and Promotions

Nikon Instant Savings on Lenses with purchase of any Nikon DSLR

AF Flashes	Price	Rebate	Final
SB-300	146.95		
SB-500	246.95	\$20	226.9
SB-700			
SB-910	546.95	\$50	496.9
R1 Wireless Twin Flash			
R1C1 Wireless Twin Flash System			
DX ED-IF Lenses for Digital Only	Price	Rebate	Final
10.5/2.8 Fish-Eve			
35/1.8 G AF-S (52ø)	196.95		
40/2.8 G AF-S Micro (52ø)	276.95		
35/3.5 G ED VR Micro			
10-24/3.5-4.5 G AF-S (77ø)			
12-24/4 G AF-S (77ø)			
16-85/3.5-5.6 G AF-S VR (67ø)			
17-55/2.8 G AF-S (77ø)			
18-55/3.5-5.6 G AF-S ÍI (52ø)			
18-55/3.5-5.6 G AF-S VR (52ø)	196.95		
18-55/3.5-5.6 G AF-S VR II (52ø)	246.95		
18-105/3.5-5.6 G AF-S VR *	396.95	\$100 *	296.9
18-140/3.5-5.6 G AF-S VR **	496.95	\$200 **	296.9
18-200/3.5-5.6 G AF-S VR II	596.95	\$100	496.9
18-300/3.5-5.6 G AF-S ED VR (77ø)	996.95		
18-300/3.5-6.3 G AF-S ED VR (67ø)	896.95	\$200	696.9
55-200/4-5.6 G AF-S (52ø)			
55-200/4-5.6 G AF-S VR	246.95	\$100	146.9
55-300/4.5-5.6 G AF-S VR			
D-Type AF Lenses 14/2.8 D ED	Price	Rebate	Final
14/2.8 D ED			
16/2.8 D (39ø) with Hood			
20/2.8 D (62ø)			
20/1.8 G ÀF-Ś ED (77ø)	796.95		
24/2.8 D (52ø)			
24/1.4 G AF-S ED (77ø)			
24/3.5 D ED PC-E (77ø)			
28/1.8 G AF-S (67ø)	696.95		
28/2.8 D (52ø)			
35/2.0 D (52ø) 35/1.4 G AF-S ED (67ø)			
35/2.0 D (52ø) 35/1.4 G AF-S ED (67ø)			
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64GB	84.50	72.50	139.95	159.95	49.95	_	84.95	149.95	_	98.95	199.50
128GB	_	199.95	229.95	254.95	_	_	194.95	249.98	_	219.95	349.99
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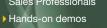
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		600x	633x	Class 10 300x	Clas 400x	ss 10 600x	Micro 633x	Extreme 80MBs	Extreme Pro 95MBs	Micro 80MBs	Clas 94MBs	s 10 Micro	90MBs	Extreme 60MBs	Extreme Pro 90MBs	95MBs	U3 280MBs	Extreme Pro 280MBs
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S	32GB	29.95	44.95	24.50	23.95	29.95	37.95	37.95	47.95	39.74	33.50	16.99	39.95	29.95	_	43.95	199.95	115.98
4	64GB	54.95	84.95	44.50	42.95	51.95	66.95	74.95	98.95	74.95	66.95	36.95	84.95	_	_	79.95	_	224.99
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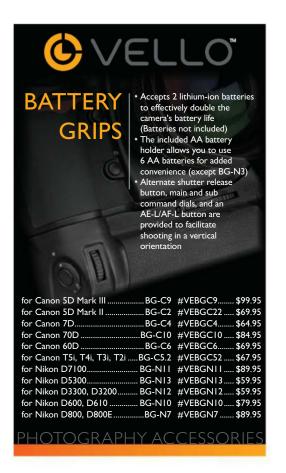














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Star 6, Star 8		16.89	22.50	43.35	49.90	46.68

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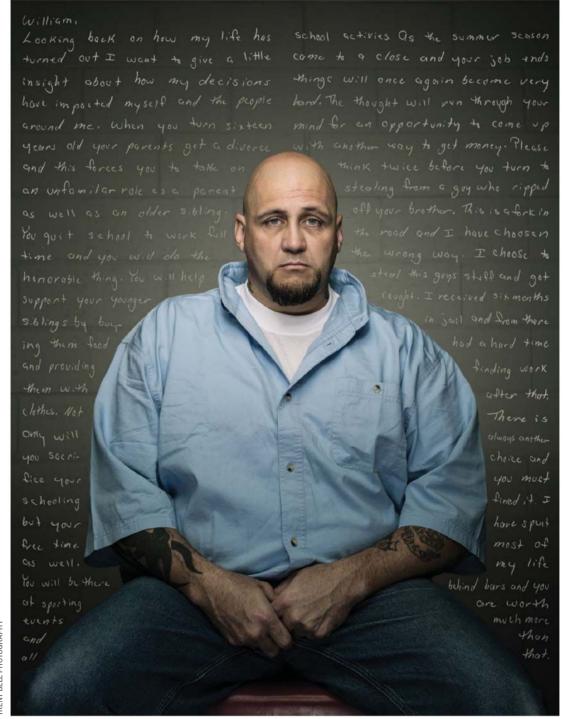
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BACKSTORY REFLECT Trent Bell's portraits ask viewers to look inward



"WOW. THIS COULD BE ME." That's what many people say when they view these pictures for the first time. They're amazed by how much they have in common with the men. It's how I felt when a good friend of mine was sentenced to 36 years in prison, which

helped inspire the Reflect project.

When I pitched the idea to the Maine State Prison, 12 men came forward. and we asked them to write a letter to their younger selves. Seeing the text and portrait together helps us understand these men as more than just "inmates"— a moniker they work hard to move beyond. It was painful, but also very brave and noble, to share their ordeal, to accept what they did and learn from it. We can learn from it, too—that's the core value of sharing these lifechanging events. —As told to Meg Ryan

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